

U. S. A R M Y

TRANSPORTATION RESEARCH COMMAND

FORT EUSTIS, VIRGINIA

SUPPLEMENT
to
TRECOM TECHNICAL REPORT 64-4

**CRASH INJURY EVALUATION
PERSONNEL RESTRAINT SYSTEMS STUDY
CH-47 VERTOL CHINOOK**

Contract DA 44-177-AMC-888(T)

April 1964

AD-667659

prepared by:

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**A Division Of
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New York, New York**

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Task 1A024701A12101
Contract DA 44-177-AMC-888(T)
TRECOM Technical Report 64-4

April 1964

SUPPLEMENT
to
PERSONNEL RESTRAINT SYSTEMS STUDY,
CH-47 VERTOL CHINOOK

Crash Injury Evaluation
AvCIR 62-26

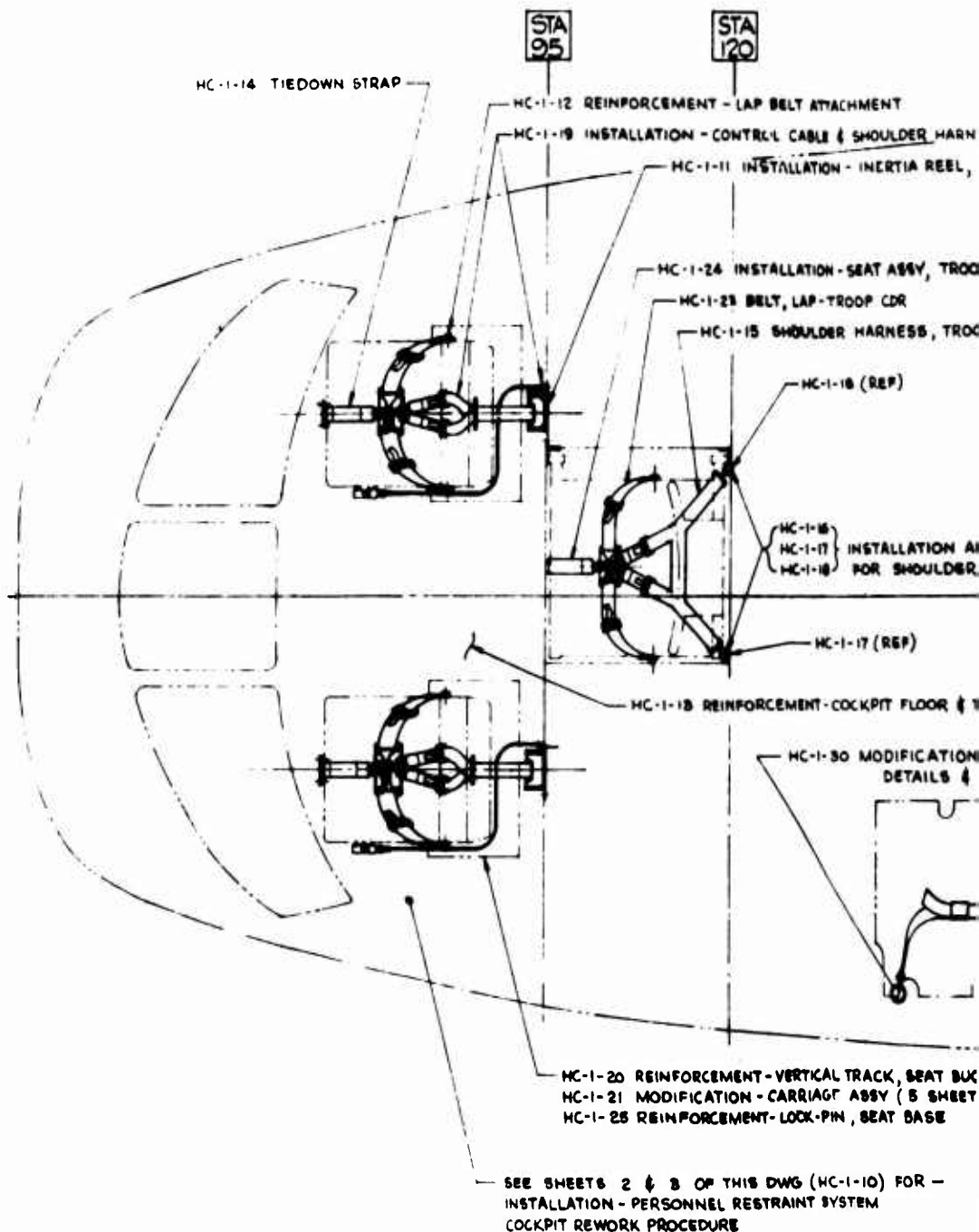
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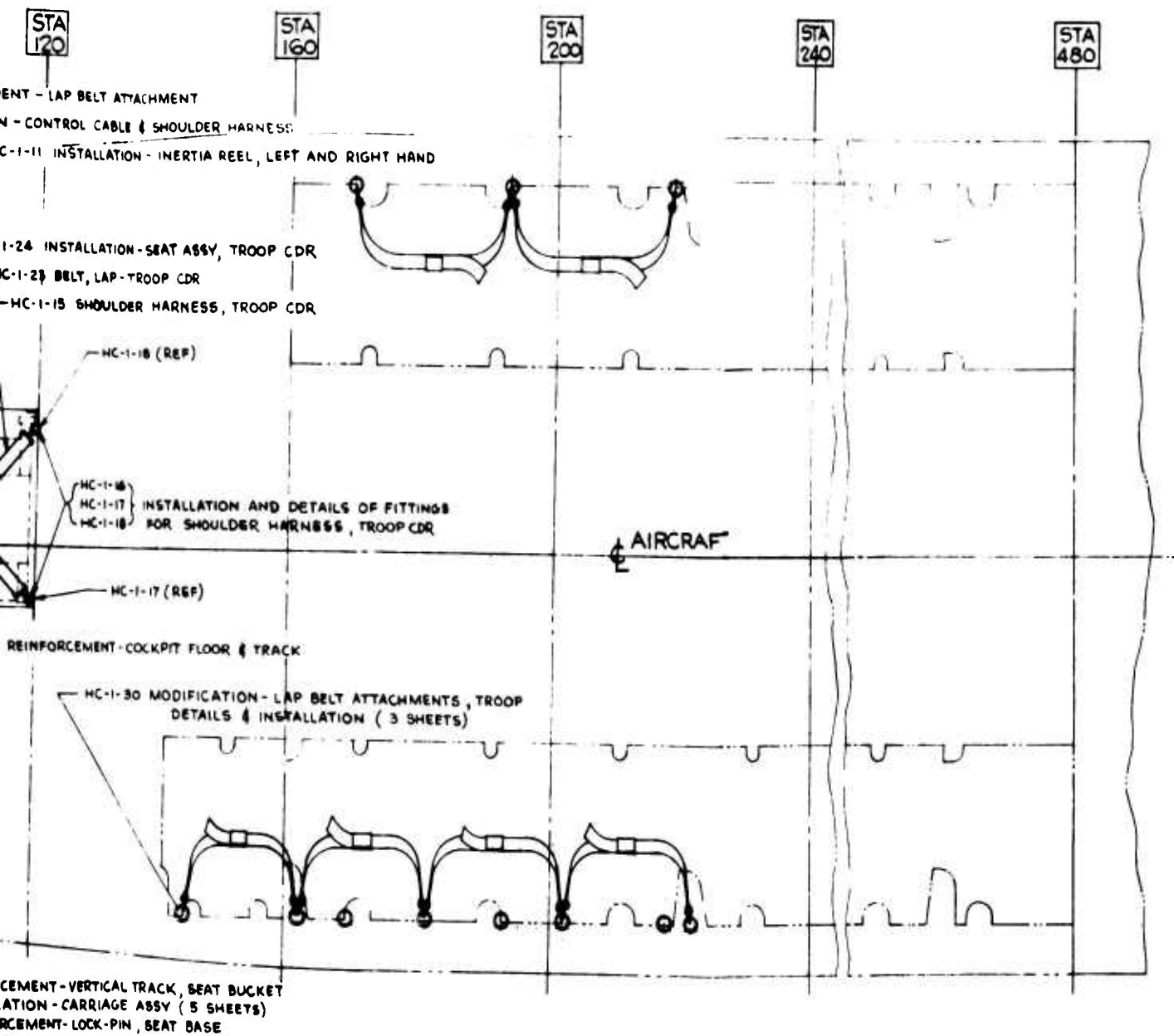
for
U. S. ARMY TRANSPORTATION RESEARCH COMMAND
FORT EUSTIS, VIRGINIA

CONTENTS

	<u>Page</u>
HC-1-10 Installation of Personnel Restraint System	1-3
HC-1-11 Inertia Reel Installation (Pilot's and Copilot's Seat)	4-6
HC-1-12 Reinforcement of Lap Belt Attachment	7
HC-1-13 Reinforcement of Cockpit Floor and Track Modification	8, 9
HC-1-14 Installation of Tie-Down Strap (Alternate 1)	10
HC-1-19 Installation of Control Cable and Shoulder Harness	11-13
HC-1-20 Reinforcement of Vertical Track, Seat Bucket (Crew Seat)	14
HC-1-21 Modification of Carriage Assembly (Crew Seat)	15-19
HC-1-25 Reinforcement of Lock-Pin Assembly (Seat Base)	20
HC-1-15 Shoulder Harness (Troop Commander)	21
HC-1-16 Installation of Attachment Fitting for Shoulder Harness	22
HC-1-17 Fitting for Shoulder Harness Attachment (Left-Hand Side)	23
HC-1-18 Fitting for Shoulder Harness Attachment (Right-Hand Side)	24
HC-1-22 End Fitting for Lap Belt	25

	<u>Page</u>
HC-1-23 Lap Belt	26
HC-1-24 Installation of Restraint System	27
HC-1-30 Lap Belt Attachments	28-30
AvCIR-10 Lap Belt Tie-Down Strap	31
AvCIR-15 Pilot's Tie-Down Strap	32

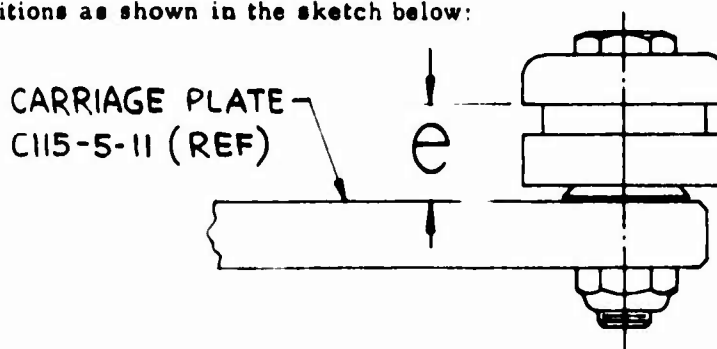




OF THIS DWG (HC-1-10) FOR -
REL RESTRAINT SYSTEM
URE

REWORK PROCEDURE FOR COCKPIT OF HC-1

1. Remove entire seat assembly from aircraft by removing the counter-balance assemblies from back of the bucket and the pins from floor tracks.
2. Remove following items from seat bucket:
 - a. Inertia reel and shoulder straps
 - b. Seat belt and belt attachment
3. Remove shrouds and four rollers (C115-5-3) at forward edge of seat base from the carriage assembly (C-115-5) and lift the bucket from the seat base. The distance (e) between the edge of the annular groove in the roller and the Carriage Plate should be recorded for all eight roller positions as shown in the sketch below:



Remove all rollers from Carriage Plate and accomplish rework of plate per HC-1-21.

4. Rework the seat as follows:
 - a. Modify Carriage Assembly (C-115-5) per drawing HC-1-21.
 - b. Add fasteners to the C-115-3-71 Vert. Track on Seat Bucket per HC-1-20.
 - ~~c. Rework seat base diagonal brace per HC-1~~
 - d. Install heat treated seat belt brackets with high-strength bolts per HC-1-12.
 - e. Install seat belt tiedown strap on bucket per HC-1-14.
 - f. Rework floor tracks and beams per HC-1-13.
 - g. Install Reel Control Cable Clamps per HC-1-19.
 - h. Install Inertia Reel on F. S. 95 Bulkhead per HC-1-11.
5. Reassemble Carriage Assembly per HC-1-21 and use necessary laminated shim stock to make distance from groove to plate equal to the distance before disassembly as noted in Step 3. Install carriage assembly on Vert. Track of Seat Bucket and adjust eccentric cams so that no more than .020 inch clearance exists between roller and track at any position on the Track. Tighten the four bolts snugly.

REWORK PROCEDURE - HC-1 COCKPIT (CONT'D.)

6. Install the Seat Bucket and Carriage Plate (with the four rollers and slides in the forward positions deleted) until the seat bucket and carriage plate are positioned on the seat base.
7. Adjust eccentric cams on outboard side of Carriage Plates so that no more than .020 inch clearance exists between roller and curved track at any position along the track.
8. Check operation of seat bucket on the curved track and the vertical track. It should be noted that the uppermost hole in the Carriage Plate will be blocked off in the rework which will cause the seat bucket to be located 0.5 inches below the existing position. The seat bucket should move freely up and down both tracks. After final adjustments are made, tighten the .31 dia. bolts (in the carriage plate) to 80-100 inch lb. and all larger bolts to 150-200 inch lb. torque.
9. Make functional check to insure that seat positively locks in all five positions on curved track and in all 10 positions on vertical track.
10. Install seat in cockpit, and place the AN392-43 stop pin into the new hole on the floor track as noted in HC-1-13. The horizontal seat movement should now be restricted to four positions rather than the existing five positions. Check seat for free horizontal movement on floor tracks and recheck for free vert. movement on the curved track and straight track.
11. Install the counterbalance rods to back of seat bucket and thread the shoulder straps through the seat back guide.
12. Make functional check of restraint harness as follows:
 - a. Check length of center tiedown strap (HC-1-14) to insure that it can be attached to the lap belt without difficulty and also that it is not too long. The tiedown strap should definitely prevent the belt from moving high enough to pull over the hip bones and into the soft stomach tissue.
 - b. Check freedom of movement with inertia reel control handle in automatic-lock position. With seat located in the extreme up and aft position, the pilot should have sufficient shoulder strap travel to allow him to reach all necessary controls.

MA-G INERTIA REEL (REF.)

-3 BRACE
SHIM AS REQ'D

114S1101-21 WEB
.032 (REF.)
AT STA. 95

W.L. (REF.)
17.00

STA
95

-3 BASE PLATE
-4 COVER

STRAP (REF.)

B.L. (REF.)
21.89

SUPPORT -1 -5 BRACE

114S1105-95 CAP
AND 10133-2003 (REF.)

AN470AD3 RIVET 7 REQ.
USE EXISTING RIVET
PATTERN ON B.L. 18 BLKD

AN3-G BOLT
AC365-D1032
NUT- 3 REQ EA.

SUPPORT
-2

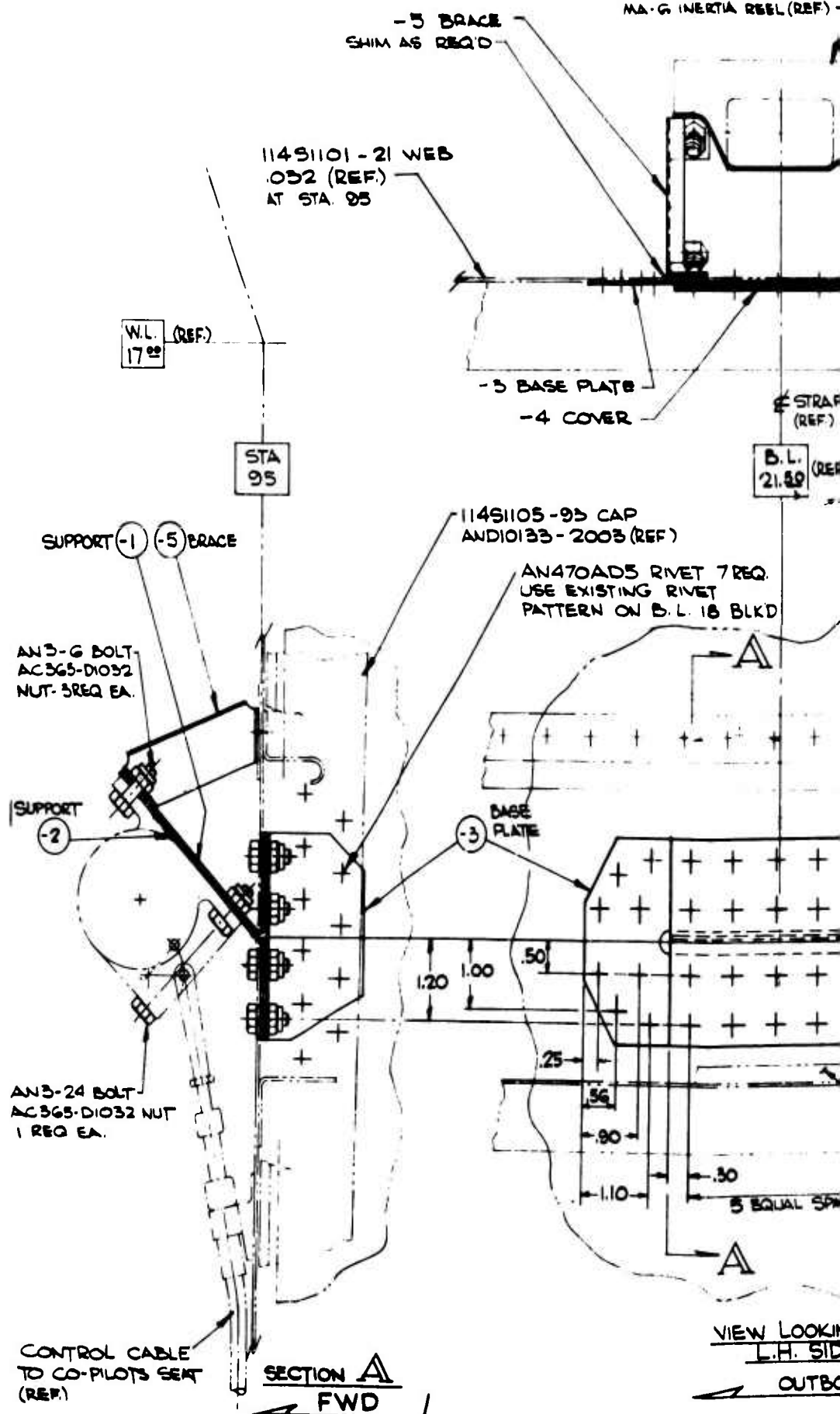
BASE
PLATE
-3

AN3-24 BOLT
AC365-D1032 NUT
1 REQ EA.

CONTROL CABLE
TO CO-PILOTS SEAT
(REF.)

SECTION A
FWD

VIEW LOOKING
L.H. SIDE
OUTBOARD



71A REEL (REF)

-2 SUPPORT

-1 SUPPORT

-5 BRACE

114S1101 - 28 WEB
.020 (REF)

CAP (REF)

PILOT DRILL #40(398)

STRAP TAKE-OFF
(REF)

B.L.
21.89 (REF)

B.L.
18.99 LEFT

SPOTWELD 4 PLACES
AS SHOWN

25R TYPICAL

SLOTTED BOTH SIDES

SPOTWELD
AS SHOWN

SLOT

7 REQ.
B BLKD

-A

-4
COVER

W.L.
8.50

DETAIL OF BRACE -5

ADD 3 RIVETS AS SHOWN TO
BLKD STA 95 AN470ADS BETWEEN
EXISTING RIVETS AS INDICATED BY
SYMBOL ⊕
AN3-4 BOLT
AC365-D1052 NUT
4 REQ EA.

AN470ADS RIVET 34 REQ.
NOTE: RIVET PATTERN
SYMMETRICAL ABOUT
W.L. 8.50

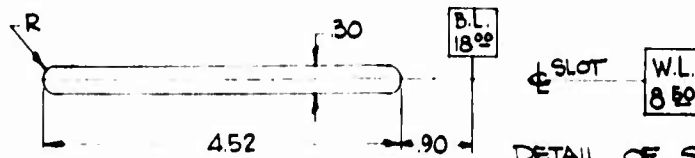
SHELF 114E3007 (REF)

WEB .025 (REF)
B.L. 18L BLKD 114S1105

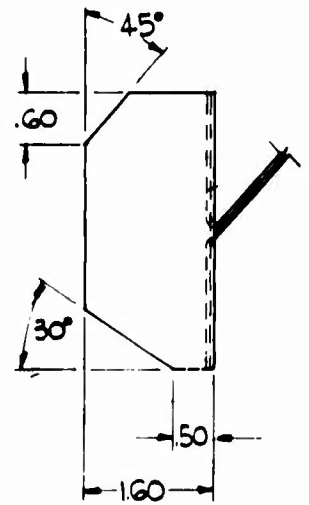
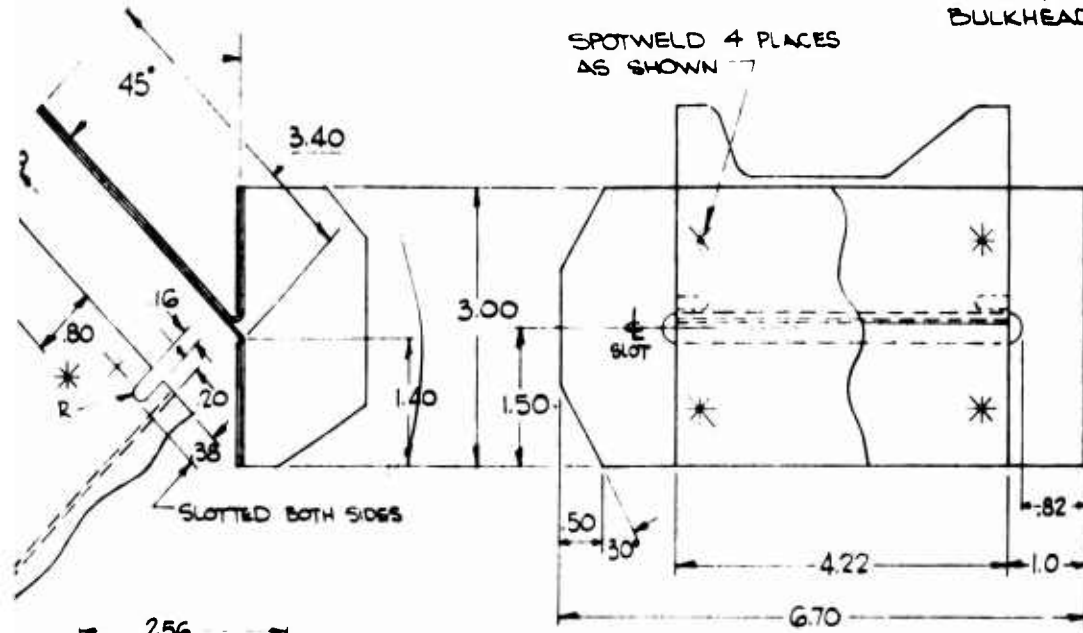
VIEW LOOKING FORWARD
L.H. SIDE
OUTBOARD

1

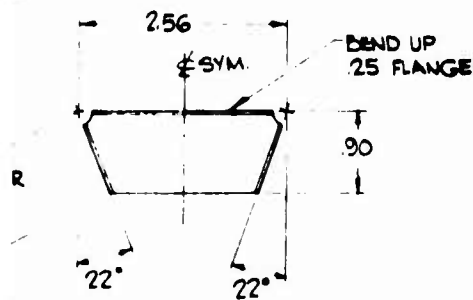
2



DETAIL OF SLOT CUT IN -3
BASE PLATE. DIMENSION ALSO
APPLY TO SLOT CUT IN STA. 95
BULKHEAD



DETAIL OF SUPPORT -1-2



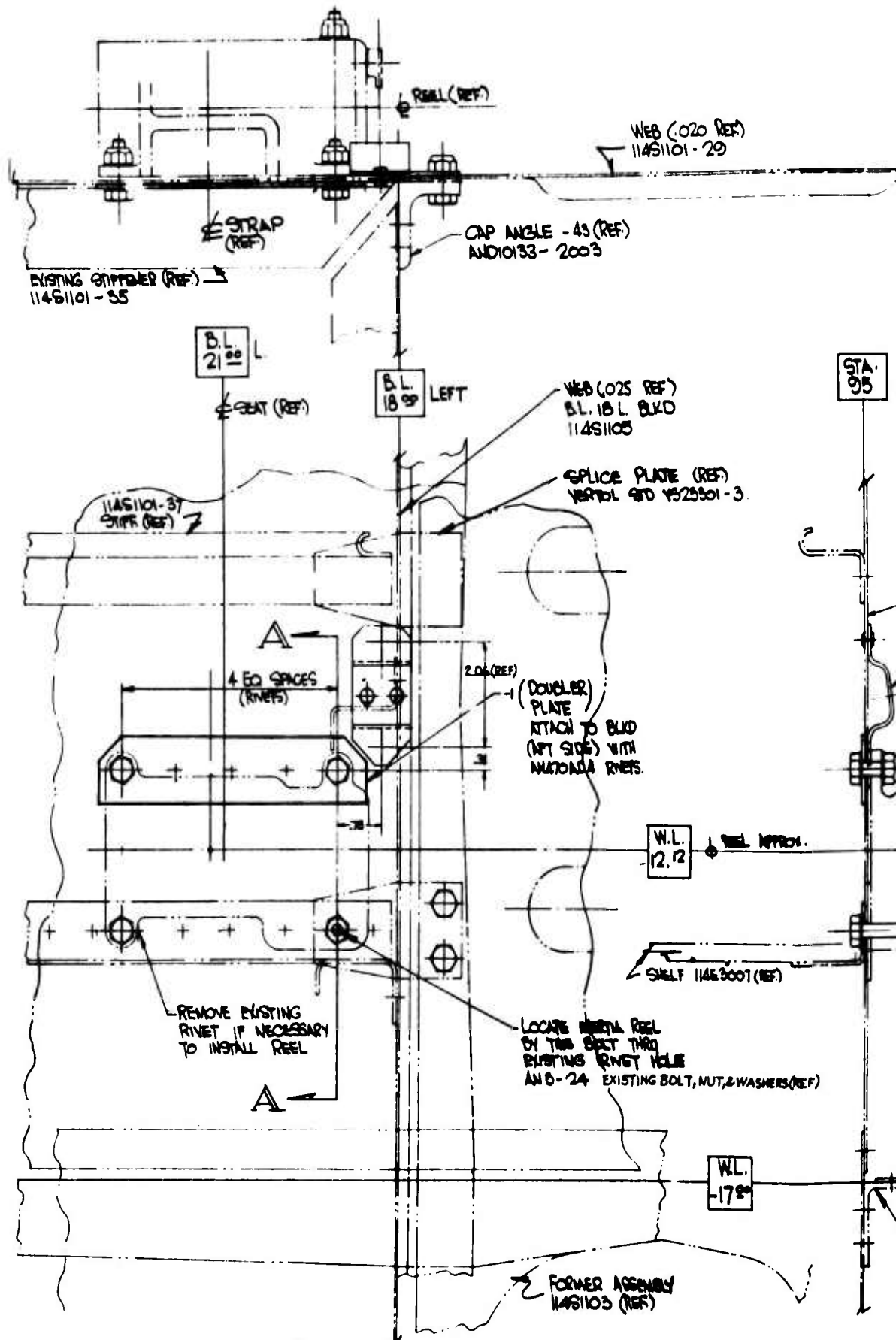
DETAIL OF BRACE -5

SHOWN TO
DADS BETWEEN
INDICATED BY

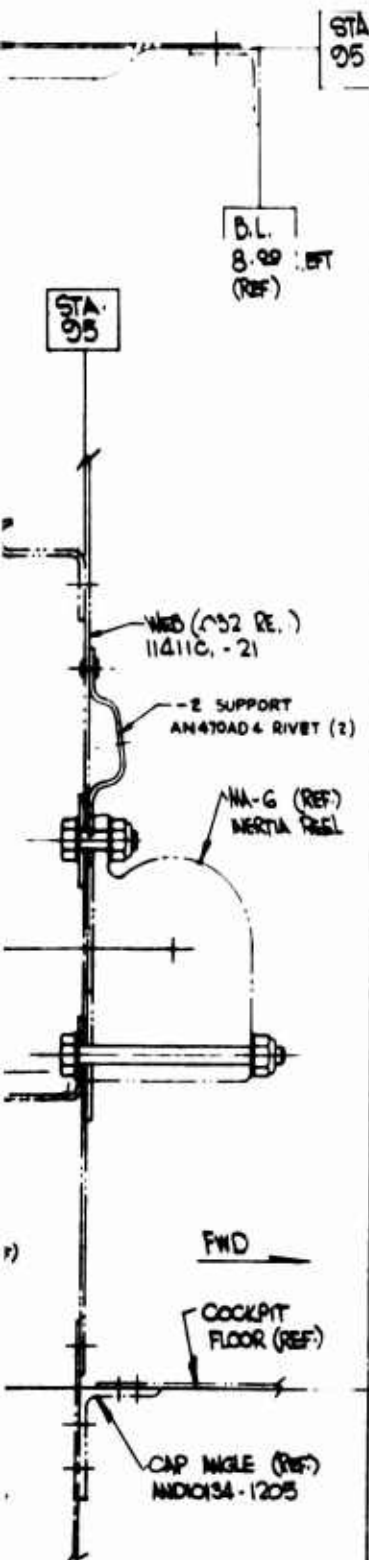
34 REQ.
ERN
OUT

REF)

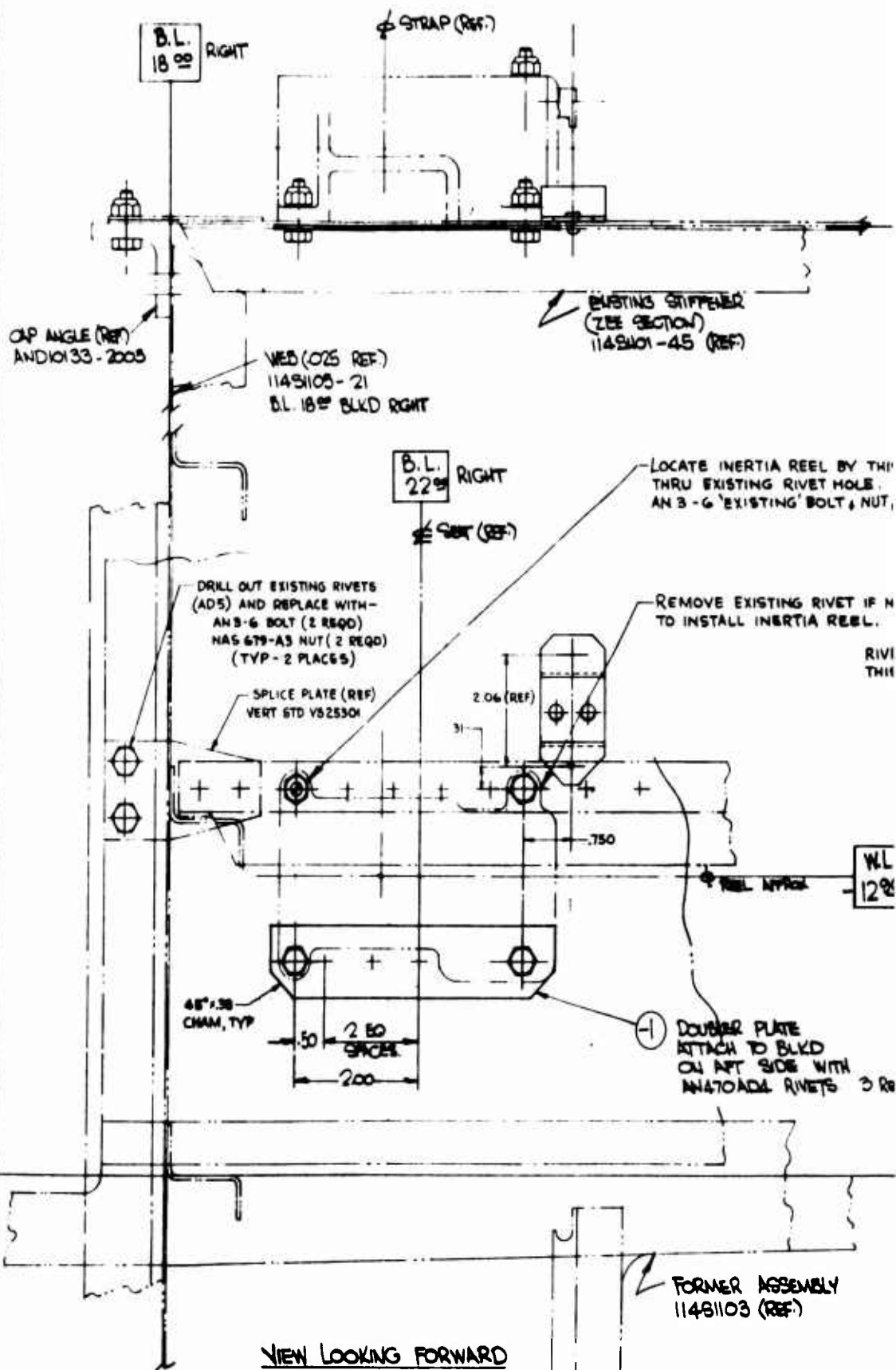
105



VIEW LOOKING FORWARD
 LEFT HAND SIDE
 AT STATION 95 BULKHEAD

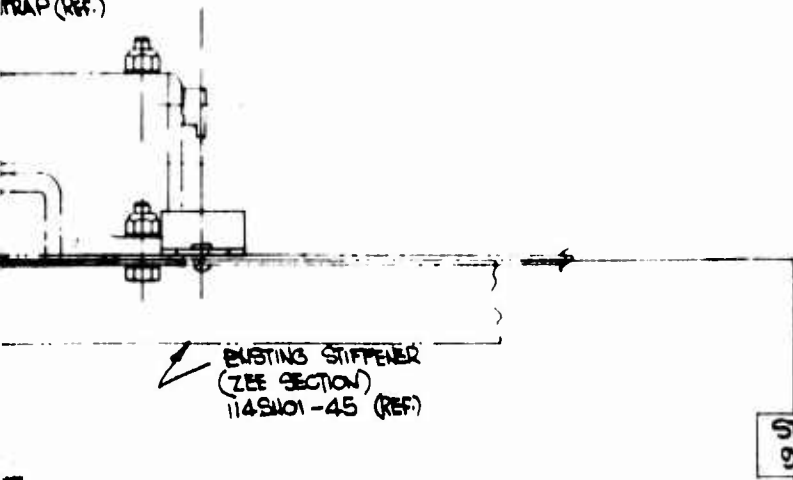


SECTION A-A
FULL SIZE
LOOKING OUTBOARD



VIEW LOOKING FORWARD
RIGHT HAND SIDE
AT STATION 95 BULKHEAD

TRAP (REF.)



RT

W.L. 12'00" RIGHT

SEAT (REF.)

LOCATE INERTIA REEL BY THIS BOLT THRU EXISTING RIVET HOLE AN 3 - G 'EXISTING' BOLT, NUT, & WASHERS (REF)

REMOVE EXISTING RIVET IF NECESSARY TO INSTALL INERTIA REEL.

RIVET HEAD ON THIS SIDE (TYP)

WEB (032 REF.) 114S1101-23

-2 SUPPORT AN470AD4 RIVET (2 REQD)

MA-G INERT A REEL (REF)

2 06 (REF)

31

.750

W.L. 12'00"

-1 DOUBLER PLATE ATTACH TO BLKD ON APT SIDE WITH AN470AD4 RIVETS 3 REQ.

W.L. -17'00"

FORMER ASSEMBLY 114S1103 (REF.)

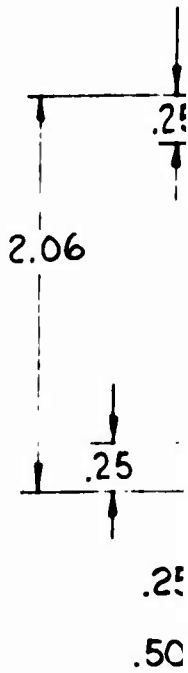
FORWARD SIDE BULKHEAD

2

5

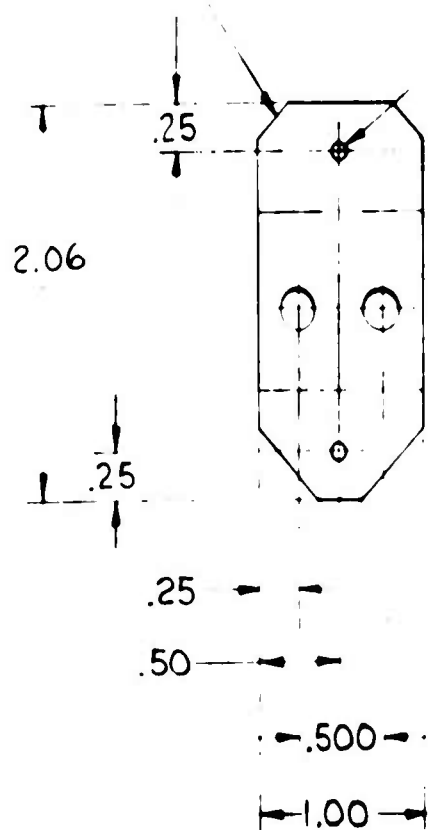
3

45° x .19 CHAM, TYP



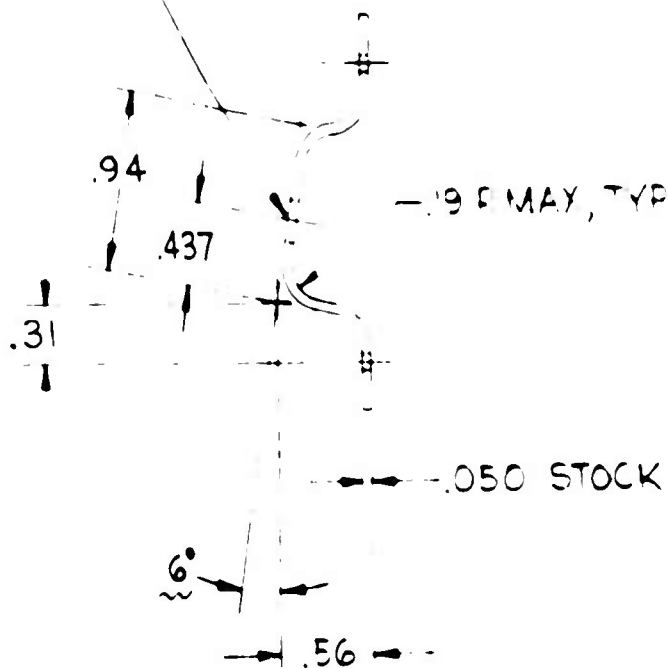
2 ZINC CHROMATE ALL OVER
1. REMOVE ALL BURRS
NOTE

19 CHAM, TYP

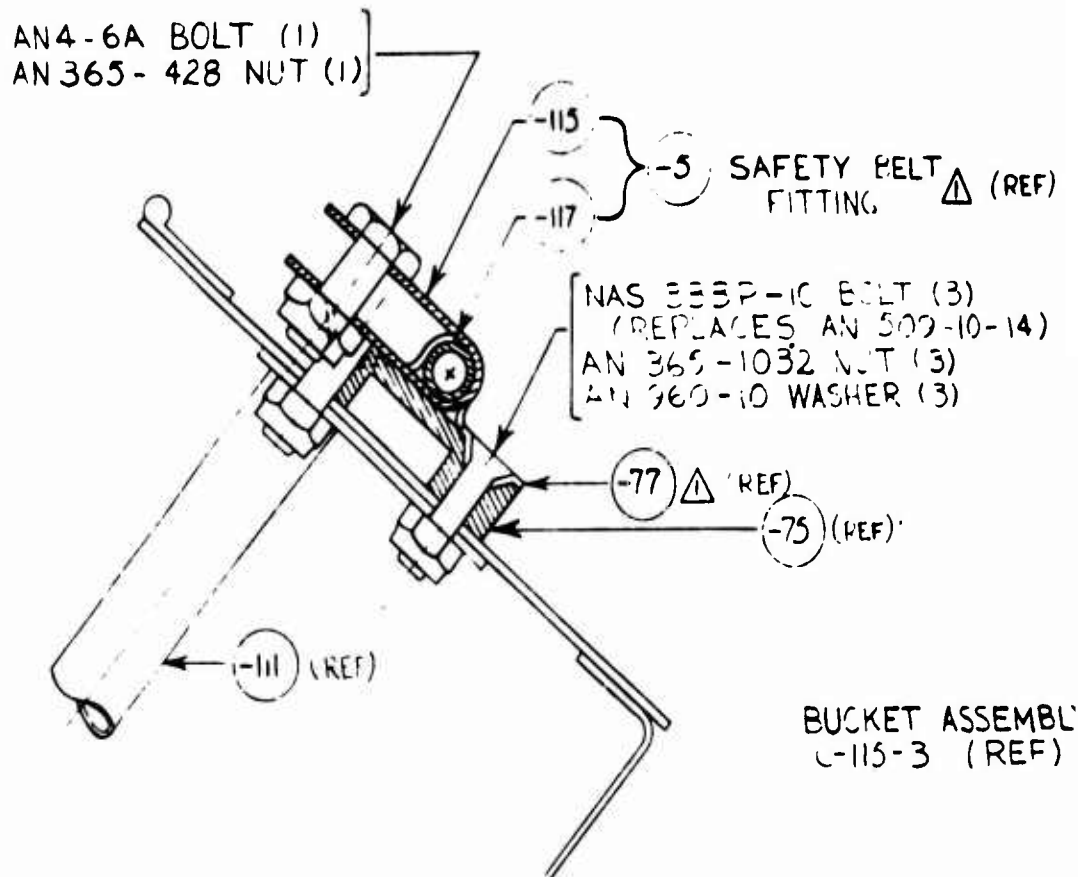


$\frac{3}{32}$ DRILL (.093) THRU, 2 HOLES

$\frac{13}{64}$ DRILL (.201) THRU, 2 HOLES



19 CHAM, TYP



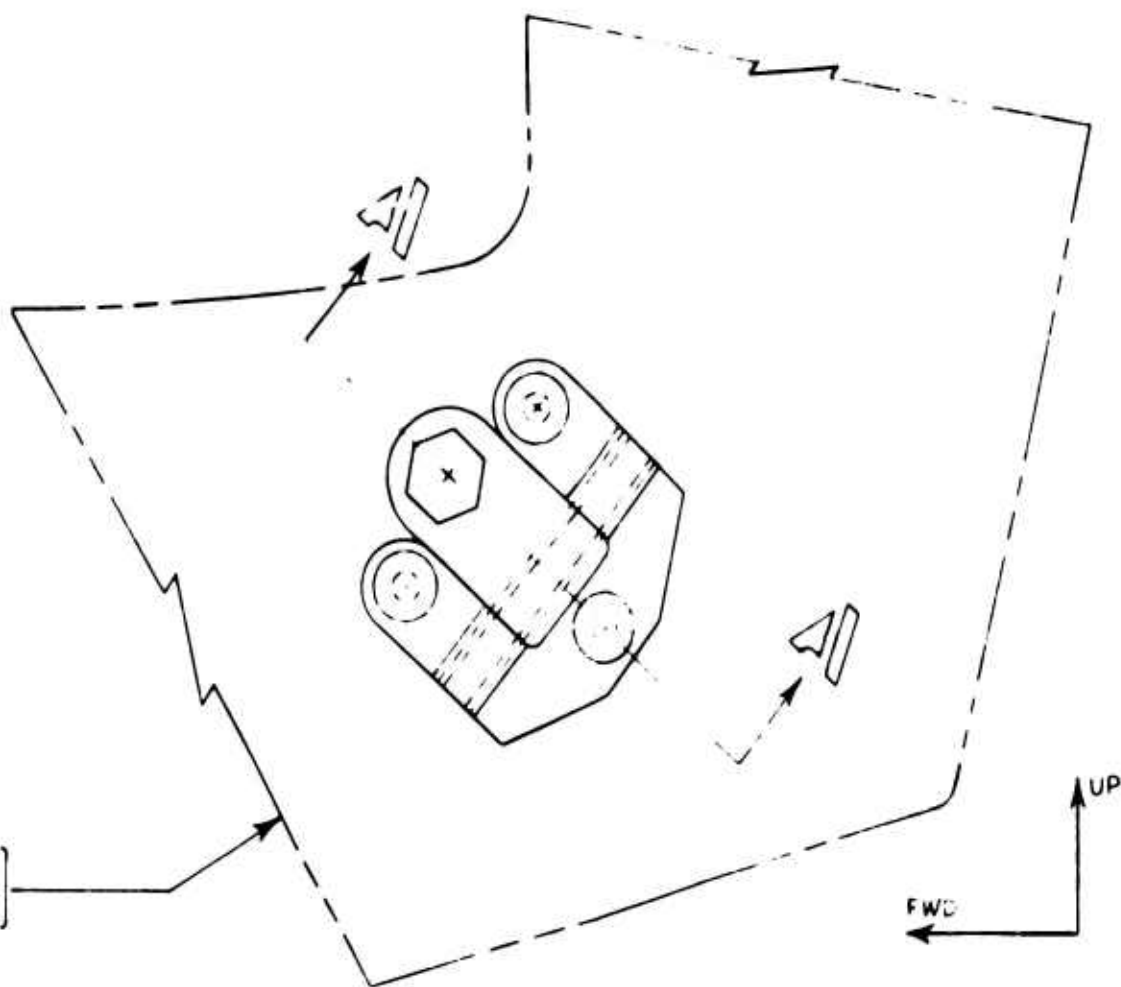
SECTION **A-A** FULL SIZE

Δ RE-HEAT TREAT
180,000 PSI TO 200,000 PSI

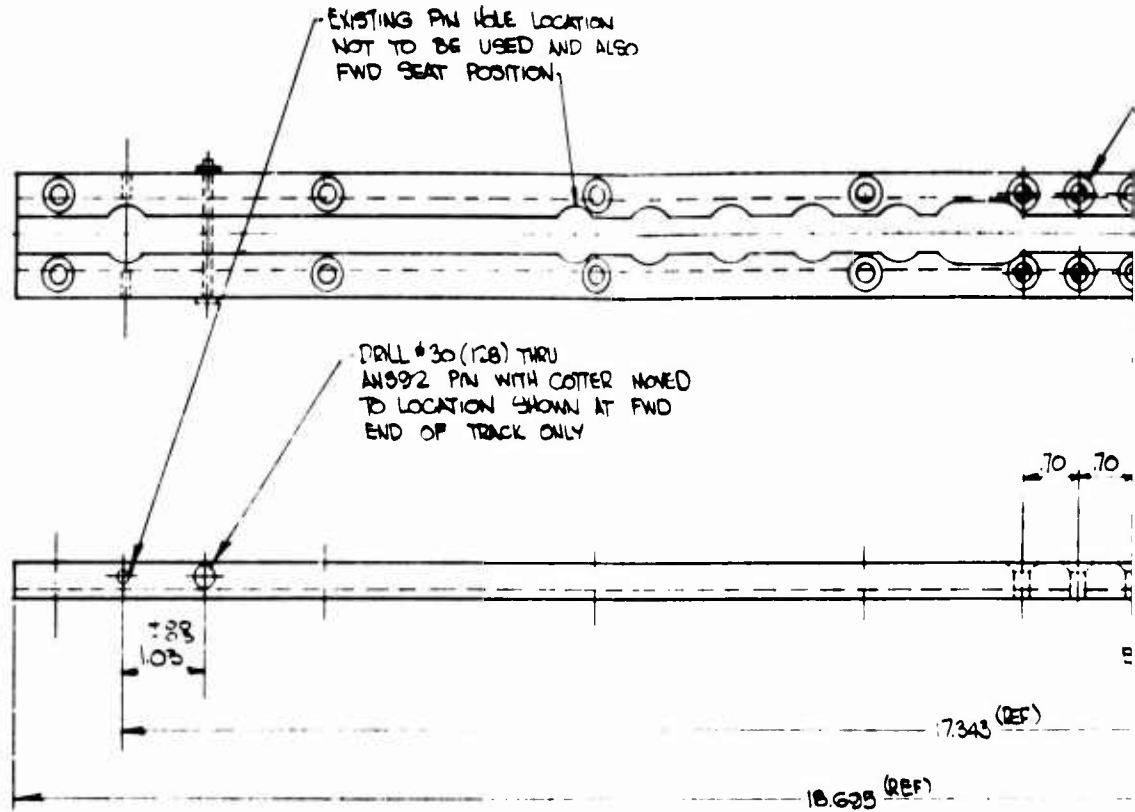
PELT 1 (REF)

2)
3) - (4)
3)
R (3)

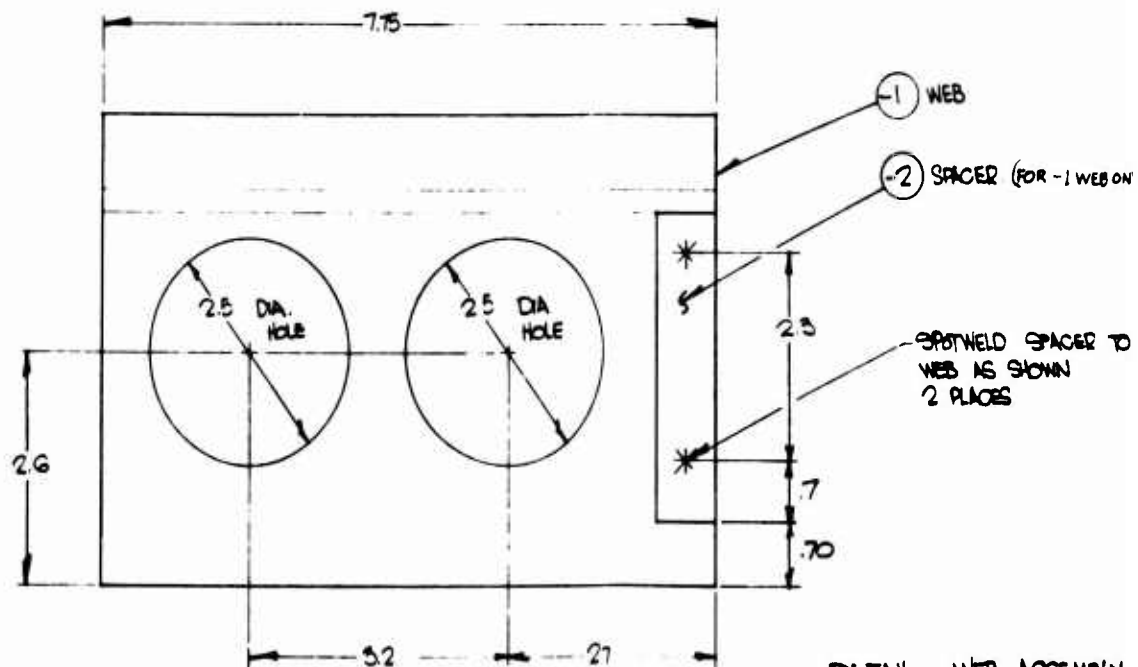
ET ASSEMBLY
-3 (REF)



FORWARD (REF)

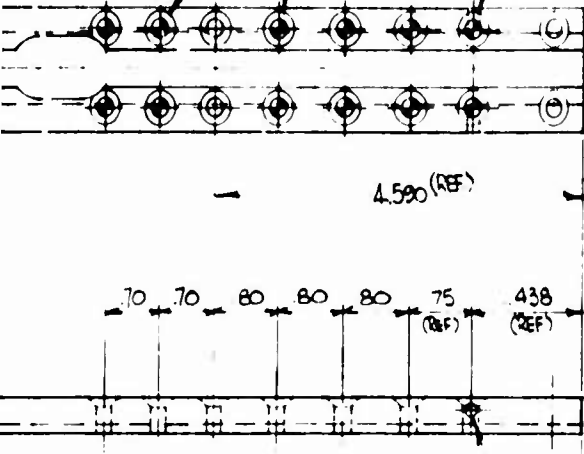


DETAIL - REWORKED TRACK SECTION
MADE FROM EXISTING AEROSMITH PART NR C-115-8



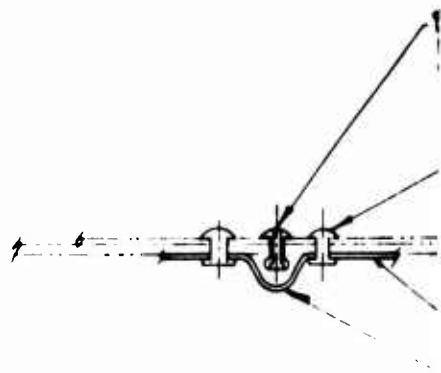
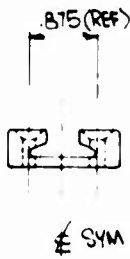
DETAIL - WEB ASSEMBLY

F) NEW HOLE LOCATIONS MARKED (⊕)
 DRILL #10 (.124) - C/SINK 378 DIA ± .005
 12 PLACES
 EXISTING HOLE LOCATIONS MARKED (⊙)
 NOTE: THIS SET OF HOLES (2)
 TO BE DRILLED ON 1/2 OF PIN HOLE



EXISTING PIN HOLE (REF) -

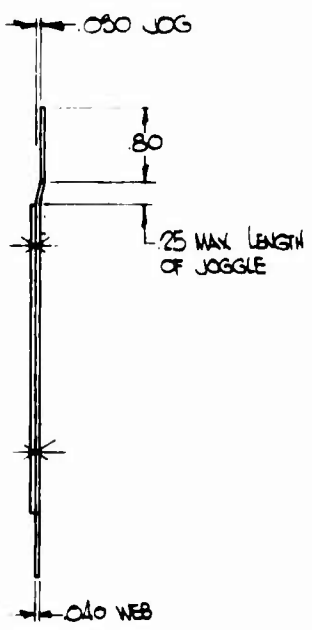
- 7.343 (REF)



DETAIL C
 TYPICAL THRU WEB AT BEAM
 FULL SIZE

K SECTION
 WITH PART NR

1) WEB
 2) SPACER (FOR -1 WEB ONLY)

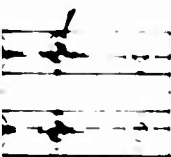


SPOTWELD SPACER TO
 WEB AS SHOWN
 2 PLACES

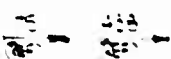
- WEB ASSEMBLY.

THE LOCATIONS MARKED
 BY THE DOTTED LINES ARE THE
 PLACES
 WHERE THE LOCATIONS MARKED

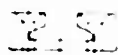
THE LOCATIONS MARKED BY
 THE DOTTED LINES ARE THE ON HOLE



THE



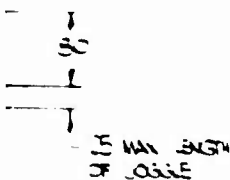
THE



THE



THE



THE

BLIND RIVET MS20300 ADS
 MAY BE INSTALLED FROM EITHER
 SIDE OF BEAM IN THRU BEAD
 SECTION

EXISTING RIVET LOCATION
 NEW WEB (OAG)



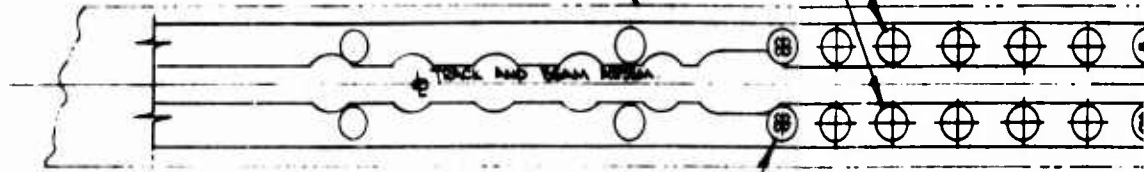
EXISTING TEE SECTION (REF/OAG)

EXISTING WEB (REF/OAG)
 BEAD SECTION IN EXISTING
 WEB (REF)

DETAIL C
 TYPICAL THRU WEB AT BEAD
 FULL SIZE

NOTE: ACCESS TO BEAM ASSEMBLY
IS THRU DOOR 114S1551-23 (REF)
IN COCKPIT FLOOR
DECK PLATE NOT SHOWN

REMOVE EXISTING PLATE NUT
THIS LOCATION -(2 PLACES)
REPLACE WITH BOLTS AND 9
AS SHOWN



EXISTING STOP PIN AT THIS
LOCATION TO BE DELETED ON ALL FOUR T

BLIND RIVET MS20600ADG
2 PLACES ON ϕ BEAD
IN EXISTING WEB. REF.
DETAIL "C" SHEET #1

AN470ADG RIVET 8 PLACES

TOP OF
COCKPIT FLOOR (REF)

DRILL THRU TO MATCH TRACK SECTION
FOR LOCATIONS OF HOLES SEE DETAIL
OF TRACK ON SHEET #1
NAS 533-11 BOLT (H1-STRENGTH) (1/4 PL)
- 5 SPACER (5/16 x .040 WNL) - 1
AN 365-1032 NUT (1/4 PLCS)
TORQUE TO 15-25 IN. LB

TRACK ASSEM AEROSMITH
PART NO C115-8 (REF)

EXTRUDED TEE SECTION
AN10136-1600 (REF)

BEAM ASSEMBLY
114S1108 (REF)

CAP ANGLE
AN10138-0301 (REF)

EXISTING RIVET
(REF)

AN470ADG RIVET
8 PLACES

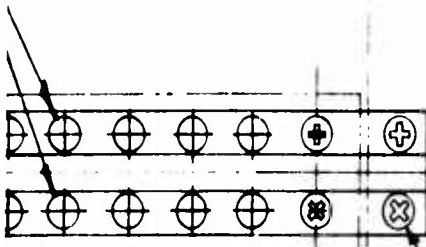
(-1) WEB INSTALLATION AT B.L. :-

31.07 LEFT
10.93 LEFT
11.93 RIGHT

114S1108 - 3 & -5
BEAM ASSEMBLIES (REF)

ONE EXISTING PLATE NUT AT
B LOCATION - (2 PLACES) AND
EPLACE WITH BOLTS AND SPACERS
B SHOWN

CAP ANGLE
AN10134 - 1205
ON 114S1403
FORMER MSGEM (REF.)



B.L. 31.07 LEFT - WEB INSTALLED ON INBD SIDE
B.L. 10.93 LEFT - WEB INSTALLED ON INBD SIDE
B.L. 11.93 RIGHT - WEB INSTALLED ON OUTBD SIDE
B.L. 32.07 RIGHT - WEB INSTALLED ON OUTBD SIDE

REP
A
OR

EXISTING STOP PIN AT THIS
LOCATION TO BE DELETED ON ALL FOUR TRACKS

REPLACE EXISTING AN509 BOLTS WITH NAS 333-B BOLTS
2 PLACES - 8 PLCS PER A/C

TO MATCH TRACK SECTION (12 PLCS)
DIMS OF HOLES SEE DETAIL
ON SHEET #1

BOLT (41-STRENGTH) (14 PLCS)
5 SPACER (5/16" x .049 WALL) - (14 PLCS)
365-1032 NUT (14 PLCS)
TORQUE TO 15-25 IN LB

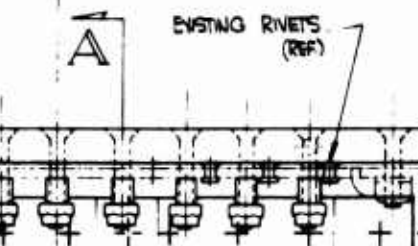
STA.
95

BUTT
LINE

CETA
BULKHEAD
VIEW LC
HA

GRIND OUT TO CLEAR
BOLT HEAD .51R APPROX.
TOP OF BEAD IN EXISTING
WEB (1 PLC ONLY)

DECK PLATE (OLD)
114S1551 - G1 (REF.)



W.L.
-17⁰⁰

AN470ADB RIVET OR 1/4" DIA
BOLTS (LOCK OR AN)
5 PLACES

-1 WEB
FOR DETAILS OF CONSTRUCTION
SEE SHEET #1

EXISTING WEB (REF.)

FOR RIVETS ON STA. 95
BULKHEAD SEE DETAIL B
FOR B.L. 32.07 R ONLY
114S1403 (REF.)

SPACER - 3
NOTE: FLATTEN WEB
LOCALLY TO INSTALL.
EXISTING PLATE NUTS
NAS607A08 (A) REF
OUT CUT WEB
TANGENT TO LIGHTENING
HOLE AS SHOWN

CAP SECTION (TYPE) ALCOA #33495 (REF)

SECTION A-A
FULL SIZE

-4 WEB - 10

LOCATION AT B.L.:-
114S1108 - 3 & -5
BEAM ASSEMBLIES (REF)

ANGLE
 34 - 1205
 451403
 R MSSEM (REF)

FT - WEB INSTALLED ON INBD SIDE
 FT - WEB INSTALLED ON INBD SIDE
 FT - WEB INSTALLED ON OUTBD SIDE
 FT - WEB INSTALLED ON OUTBD SIDE

AN 509 BOLTS WITH NAS 333-B BOLTS
 25 PER A/C

* BUTT LINE

UT TO CLEAR
 NO .38 R APPROX.
 BEAD IN EXISTING
 (1 PLC ONLY)

T OR 1/4" DIA
 AN)

CONSTRUCTION

EXISTING WEB (REF)

J STA. 95
 DETAIL B
 07 R ONLY
 (REF)

SECTION A-A
 FULL SIZE

DECK PLATE (010)
 114S1531 - G1 (REF)

SPACER - 3
 NOTE: FLATTEN WEB
 LOCALLY TO INSTALL.
 EXISTING PLATE NUTS
 NAS6B7A08 (4) REF

CUT OUT WEB
 TANGENT TO LIGHTENING
 HOLE AS SHOWN.

CAP SECTION (TEE) ALCOA #33495 (REF)

DETAIL B
 BULKHEAD STA 95
 VIEW LOOKING FORWARD
 HALF SIZE

-4 WEB - IDENTICAL TO -1 WEB
 EXCEPT AS SHOWN
 NOTE: USED AT B.L. 32.07
 114S1108 - 7 BEAM ASSEMBLY ONLY

B.L. 32.07 R

WL
 -17

REPLACE EXISTING RIVETS
 AS SHOWN WITH AN470DD6
 OR .19 DIA BOLTS (LOCK OR AN)
 (7 PLACES)

SUPPORT (REF)
 114S1403 - 29

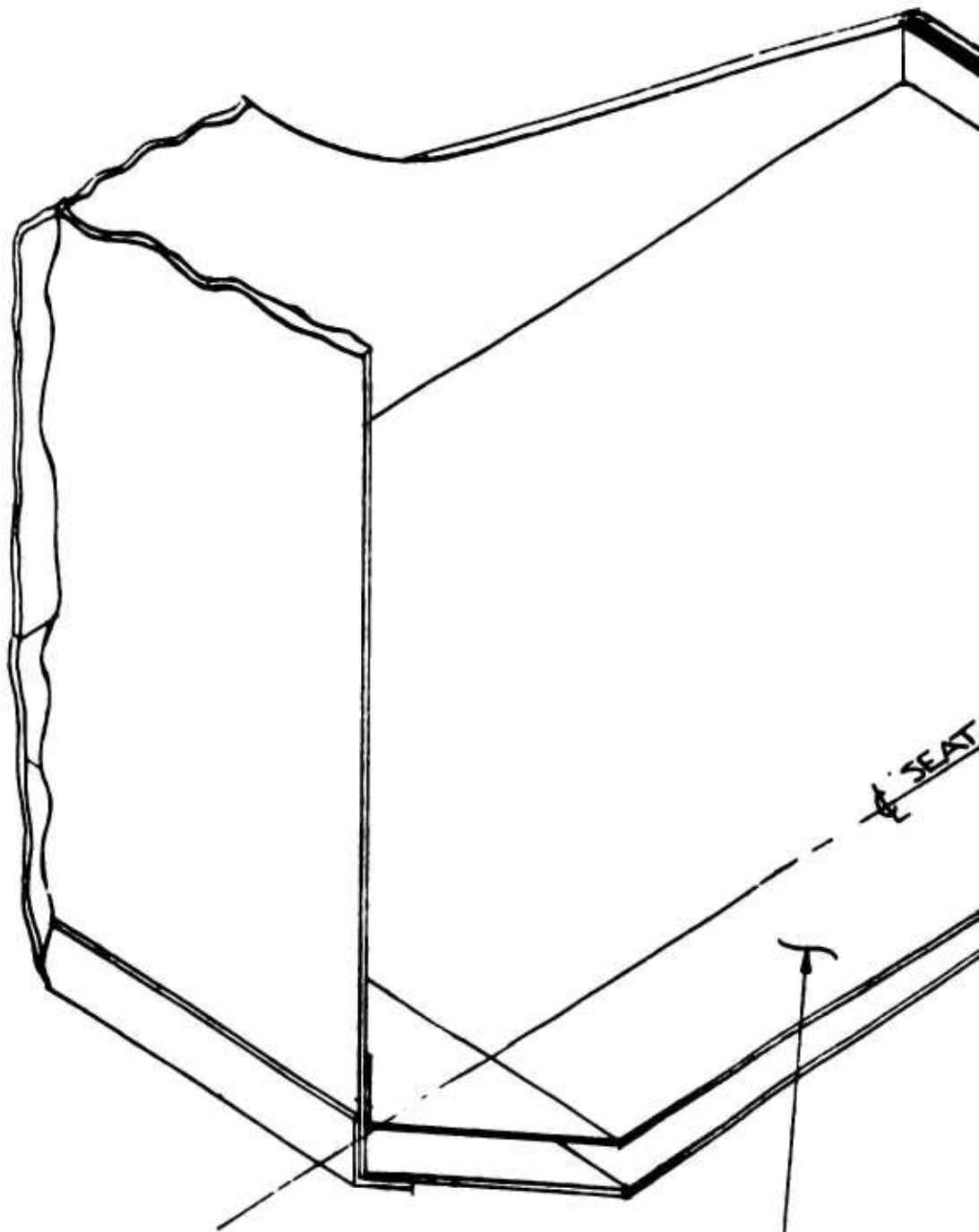
BLIND RIVET
 WS20601AD5
 AN470 AD5 RIVET
 3 PLACES

STA.
 95

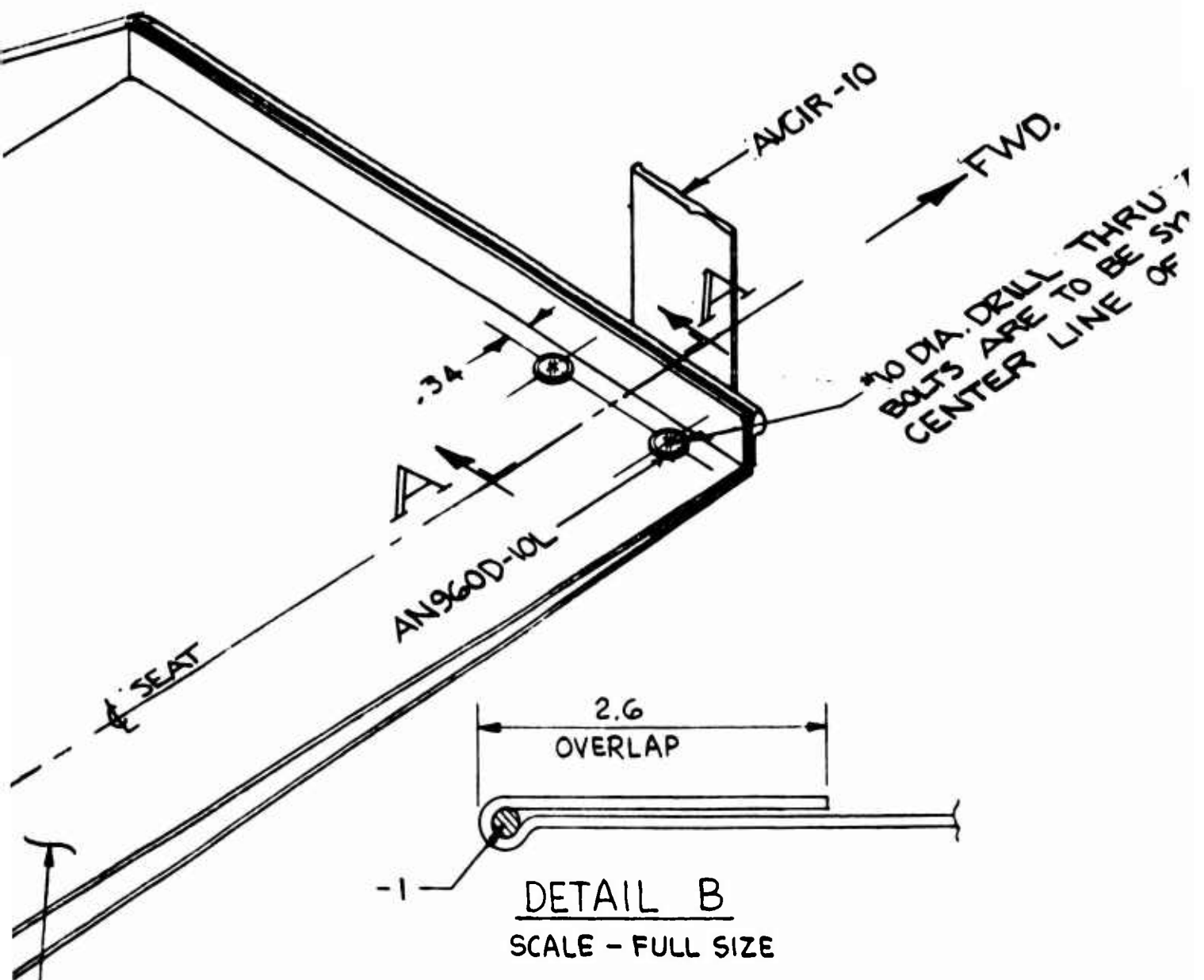
5.70

9

3



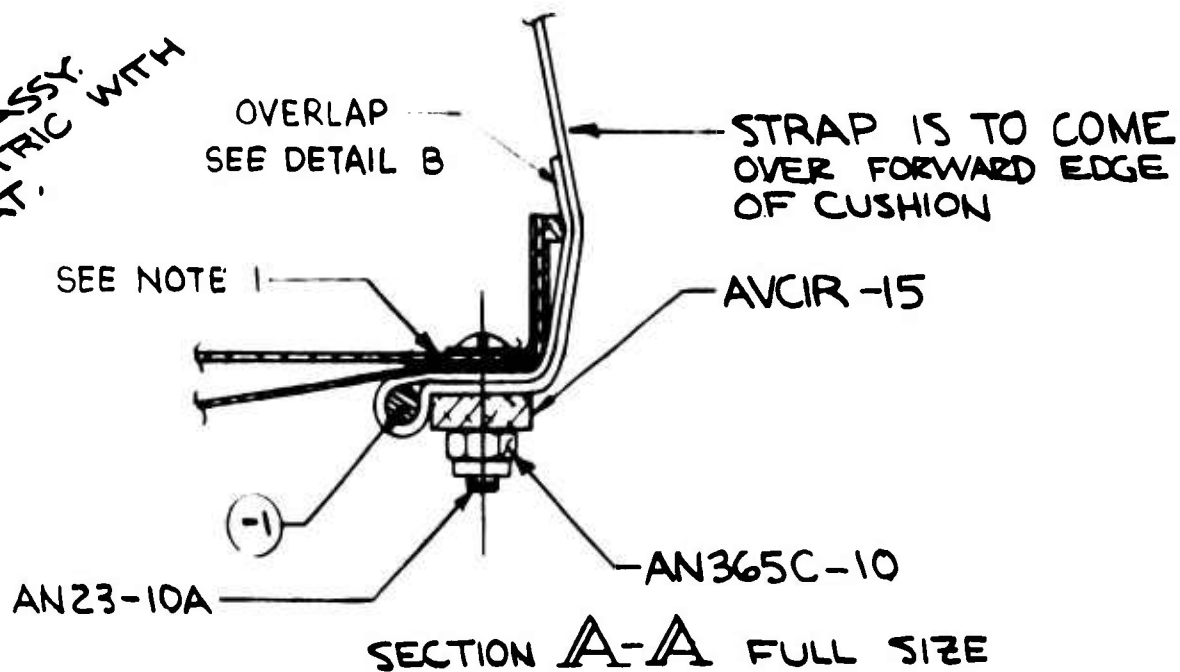
BUCKET ASSY (C115-21) REF



~NOTES~

1. WHEN INSTALLING THIS TIE DOWN STRAP ATTACHMENT, TIGHTEN THE AN365 NUTS SO THAT THE TWO BOTTOM SHEETS OF THE BUCKET ARE IN CONTACT.
2. CUSHION IS NOT SHOWN.
3. CEMENT DETAIL -1 TO WEBBING BEFORE CLAMPING. USE WEAK CEMENT.

THRU AT ASSY.
TO BE SYMMETRIC WITH
LINE OF SEAT.



C-115-1 CREW SEAT (AEROSMITH)

(-1) GUARD
MS20600A1

AN 742-4 CLAMP
MS20600A6-2 RIVET (OR EQU
(TYP, 2 PLACES)

3.8

1.4

OIO1533 SHOULDER STRAP
(SEE SHEET 3 FOR STRAP TO
REEL INSTALLATION)

SEAT POSITION SHOWN

- 1 HORIZONTAL ADJUSTMENT (BASE) - CENTER
- 2 VERTICAL ADJUSTMENT (BUCKET) - FULL DOWN
- 3 POSITION ADJUSTMENT (BUCKET) - FULL DOWN

AUTOMATIC
(LABEL POSITION SHOWN)

MANUAL LOCK
(LABEL POSITION SHOWN)

EXISTING CONTROL
HANDLE

C-115-6-11
DIAGONAL

FORWARD

CREW SEAT (AEROSMITH)

(-1) GUARD

MS20600AD4-2 RIVET (6 REQD) OR EQUIV

ANT42-4 CLAMP
MS20600AN6-3 RIVET (OR EQUIV)
(TYP, 2 PLACES)

SHOULDER STRAP (0101533) TO
PASS AFT OF THE DIAGONAL
BRACES & FORE OF GUARD (-1)
AS SHOWN

HC-1-11 (REF)

MA-6
INERTIA REEL (REF)

VIEW A-A
(LOOKING FORWARD)

⚠ NO WEIGHT ADDED, REPLACES EXISTING PARTS.
NOTE:

0101279-46 CABLE-CONTROL
("B" DIM = 46")

C-115-6-11
DIAGONAL BRACE (REF)

AUTOMATIC

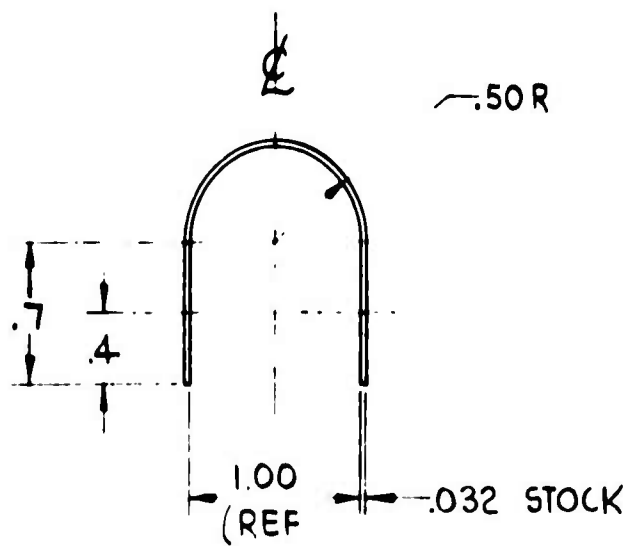
45°

22 1/2°

MANUAL

REEL CONTROL LEVER
POSITIONS

FORWARD



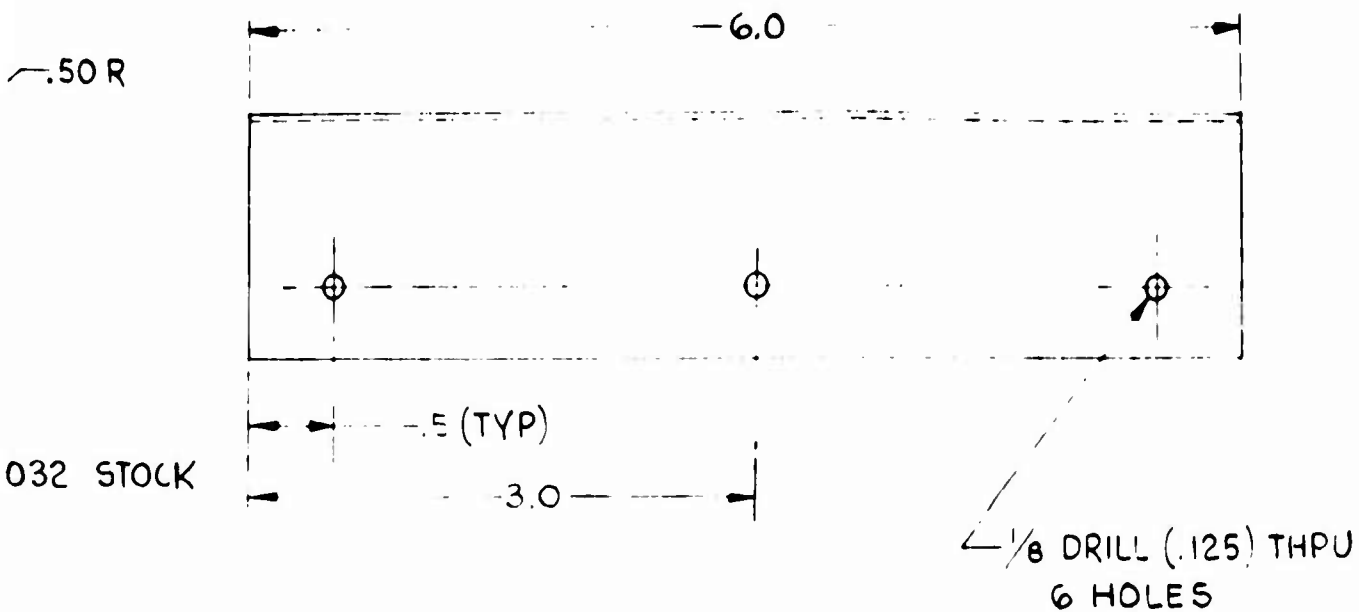
DETAIL

SCALE ~

2. ZINC CHROMATE ALL OVER.

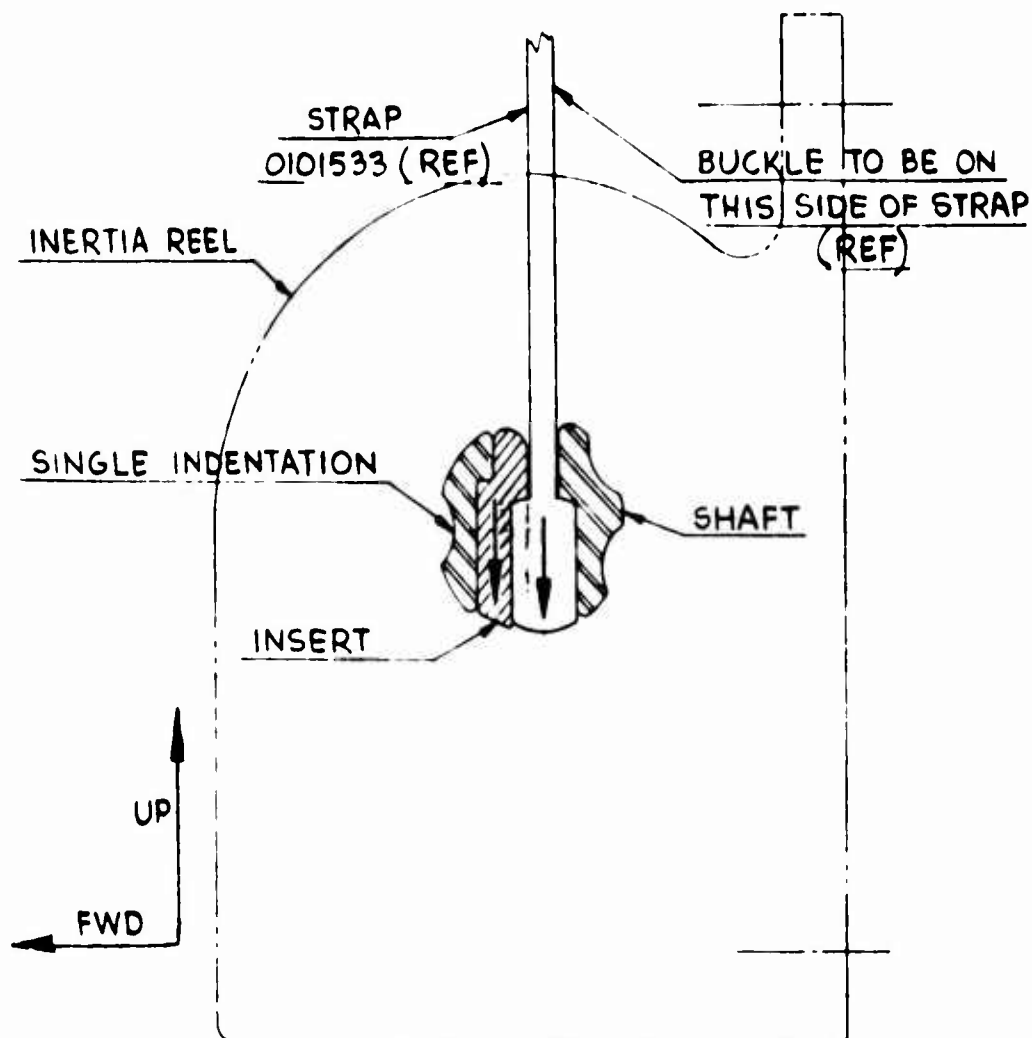
1. REMOVE ALL BURRS.

NOTE :



DETAIL -1

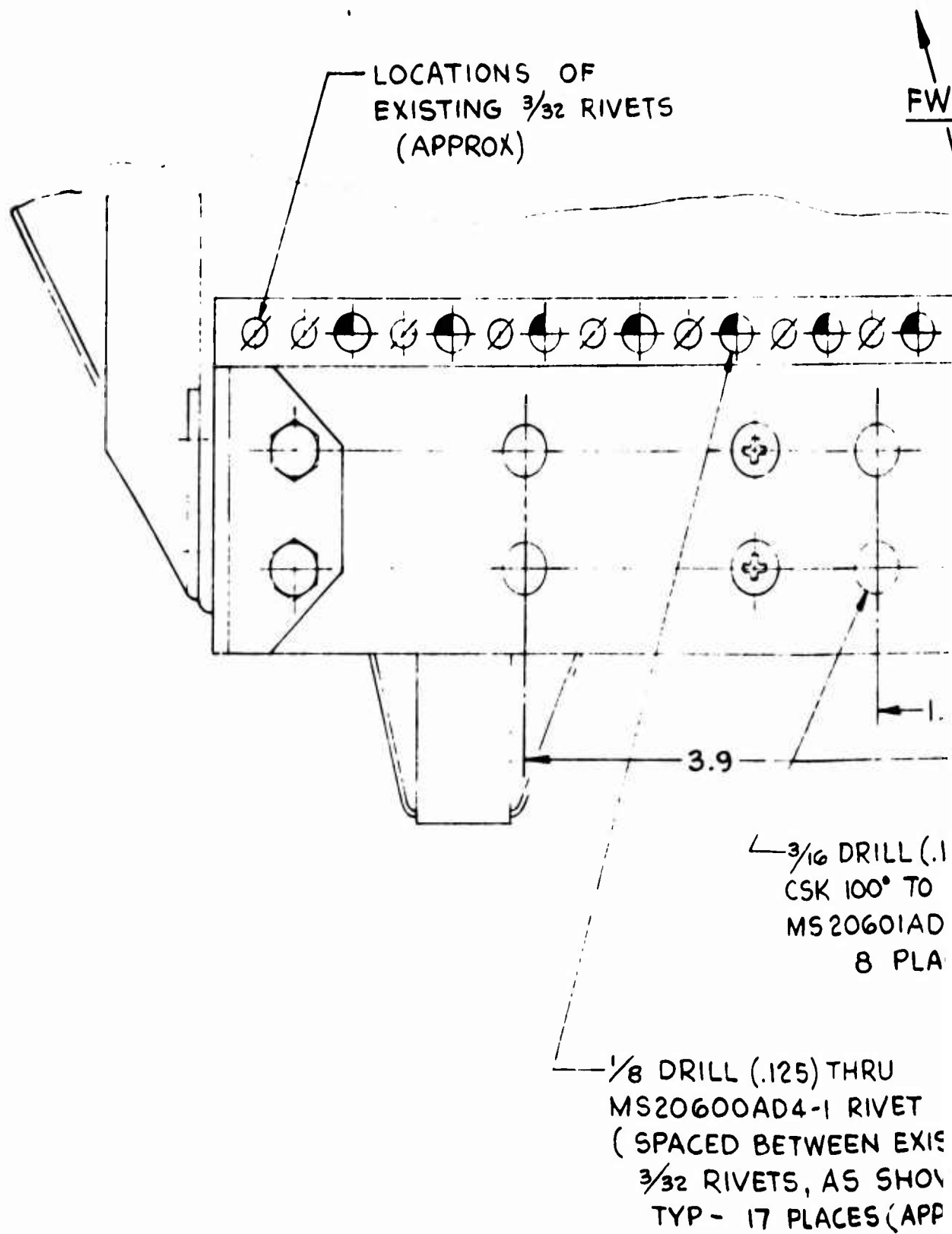
SCALE ~ FULL SIZE

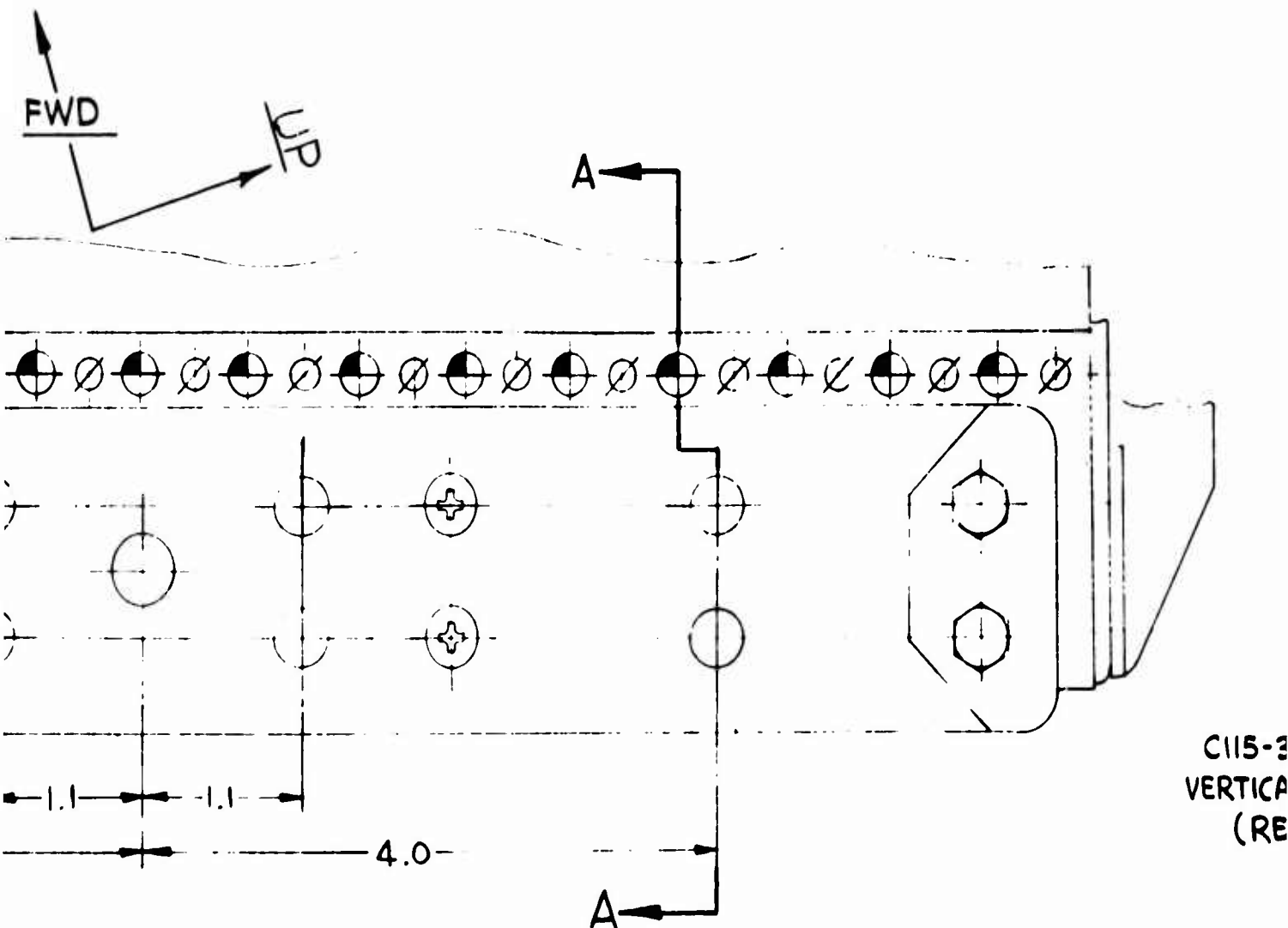


SHOULDER STRAP TO REEL INSTALLATION

STRAP REMOVAL — FULLY EXTEND STRAP AND RETAIN FROM FURTHER ROTATION BY HOLDING WITH $\frac{7}{32}$ HEX WRENCH IN HOLE PROVIDED. MOVE BOTH STRAP AND INSERT IN DIRECTION OF ARROWS. REMOVE INSERT AND PULL STRAP BACK THRU OPENING.

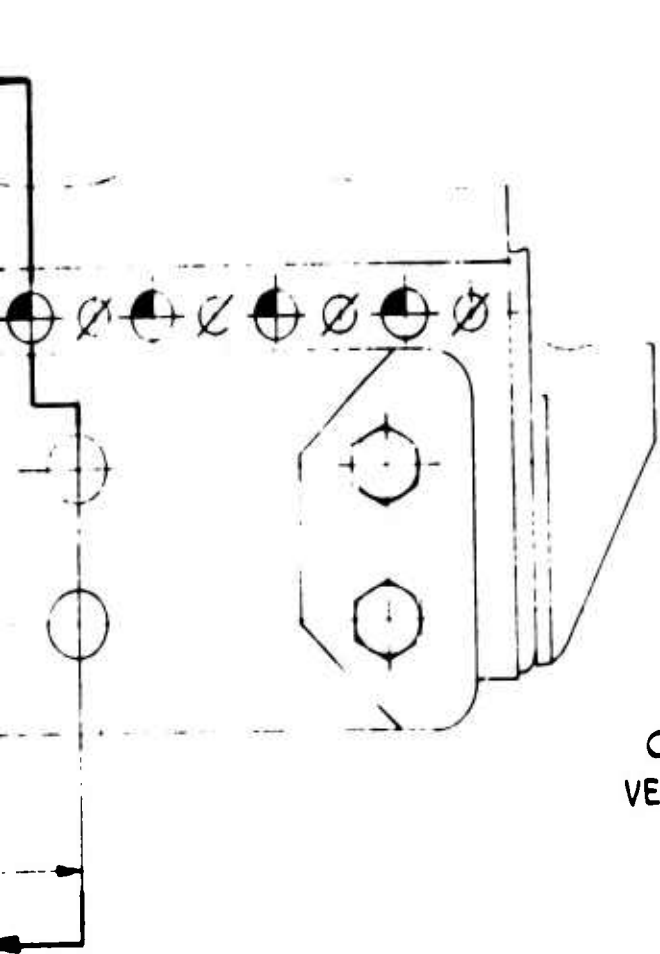
STRAP REPLACEMENT — REVERSE ABOVE PROCEDURE. INSTALL INSERT TOWARDS SIDE OF SHAFT WITH SINGLE INDENTATION, (CAUTION :: SPRING MUST BE $\frac{1}{2}$ TO $1\frac{1}{2}$ REV'S BACK FROM TIGHT).



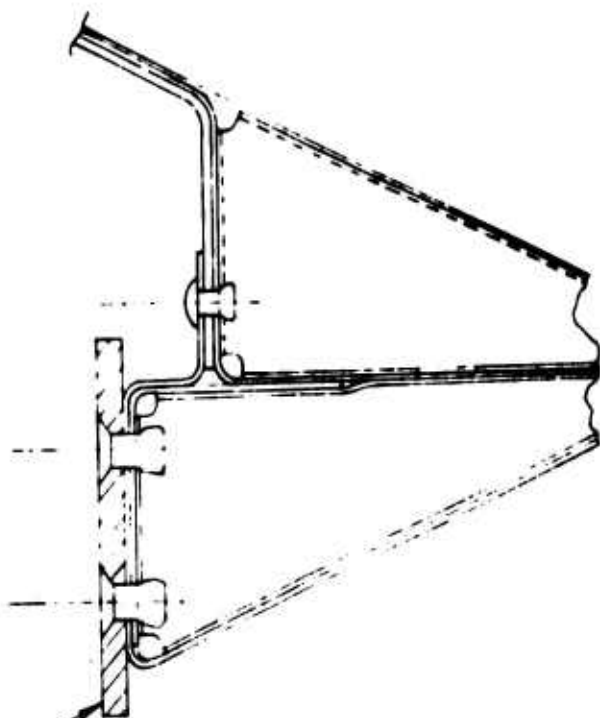


.L (.187) THRU
TO .370 DIA
DIAD6-4 RIVET
PLACES

ET
EXISTING
(HOWN)
(APPROX)

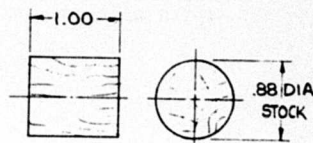


C115-3-71
VERTICAL TRACK
(REF)

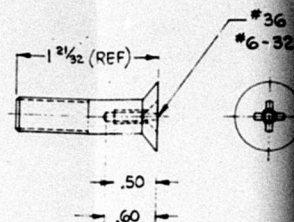


SECT A-A

- (-2) BOLT - SPECIAL
- (-6) SLIDE
- (-10) SHIM
- AN960C616L (WASHER)
- NAS1022A6 (NUT)

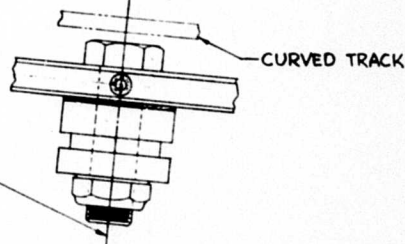


DETAIL - 3



DETAIL - 2

- AN8-14A (BOLT)
- (-12) SHIM
- (-9) SLIDE
- AN960C816L (WASHER)
- NAS1022A8 (NUT)

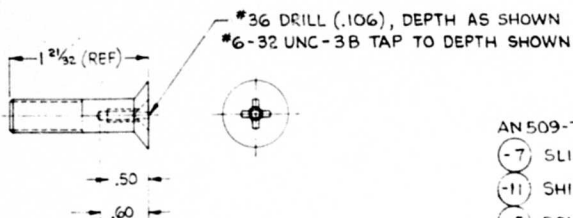


- AN 509-816-29 (BOLT)
- (-8) SLIDE
- (-1) SHIM
- (-4) DOUBLER (BOLT)
- AN531C10R10 (SCREW)
- (DRILL & COUNTER)
- AN960C816L (WASHER)
- NAS1022A8 (NUT)

LOCATION		DISPOSITION				REMARKS
SYMBOL	NEAR SIDE	FAR SIDE	NO CHANGE	RELOCATE	NEW	
A	✓			✓	✓	3/16 DIA BOLT, NUT, WASHER, DOUBLER, SHIM & SLIDE REPLACES FIXED ROLLER ASSY & ASSOC. PARTS
B	✓	✓				NONE
C	✓			✓	✓	USE EXISTING ADJUSTABLE ROLLER ASSY & ASSOC. PARTS REMOVED FROM LOCATION "D" (REVERSE BOLT)
D	✓				✓	1/2 DIA BOLT, NUT, WASHER, DOUBLER, SHIM & SLIDE REPLACES ADJUSTABLE ROLLER ASSY & ASSOC. PARTS.
E	✓		✓		✓	USE EXISTING ADJUSTABLE ROLLER ASSY & ASSOCIATED PARTS REMOVED FROM LOCATION "F"
F	✓				✓	1/2 DIA BOLT, NUT, WASHER, SHIM & SLIDE REPLACES ADJUSTABLE ROLLER ASSY & ASSOCIATED PARTS NOTE :
G	✓				✓	3/8 DIA BOLT, NUT, WASHER, DOUBLER, SHIM & SLIDE REPLACES FIXED ROLLER ASSY & ASSOC. PARTS NOTE : DRILLED BOLT REQD FOR SHROUD MOUNTING
H	✓	✓				NONE

ASSY OF HC-1-21L (LEFT HAND)

NOT



DETAIL -2

AN509-716-25 (BOLT)

(-7) SLIDE

(-11) SHIM

(-5) DOUBLER (SEE NOTE 1)

AN53ICIORIO (SCREW) 3 REQD

(DRILL & C'SK PER NOTE 1)

AN960C716L (WASHER)

NAS1022A7 (NUT)

EXISTING PARTS

BOLT (AN5-14A)

ECCENTRIC BUSHING (C115-5-15)

SPACER (C115-5-17)

WASHER (AN960-716L) AS REQD.

ROLLER ASSEMBLY [CONSISTS OF ROLLER (C115-5-13),

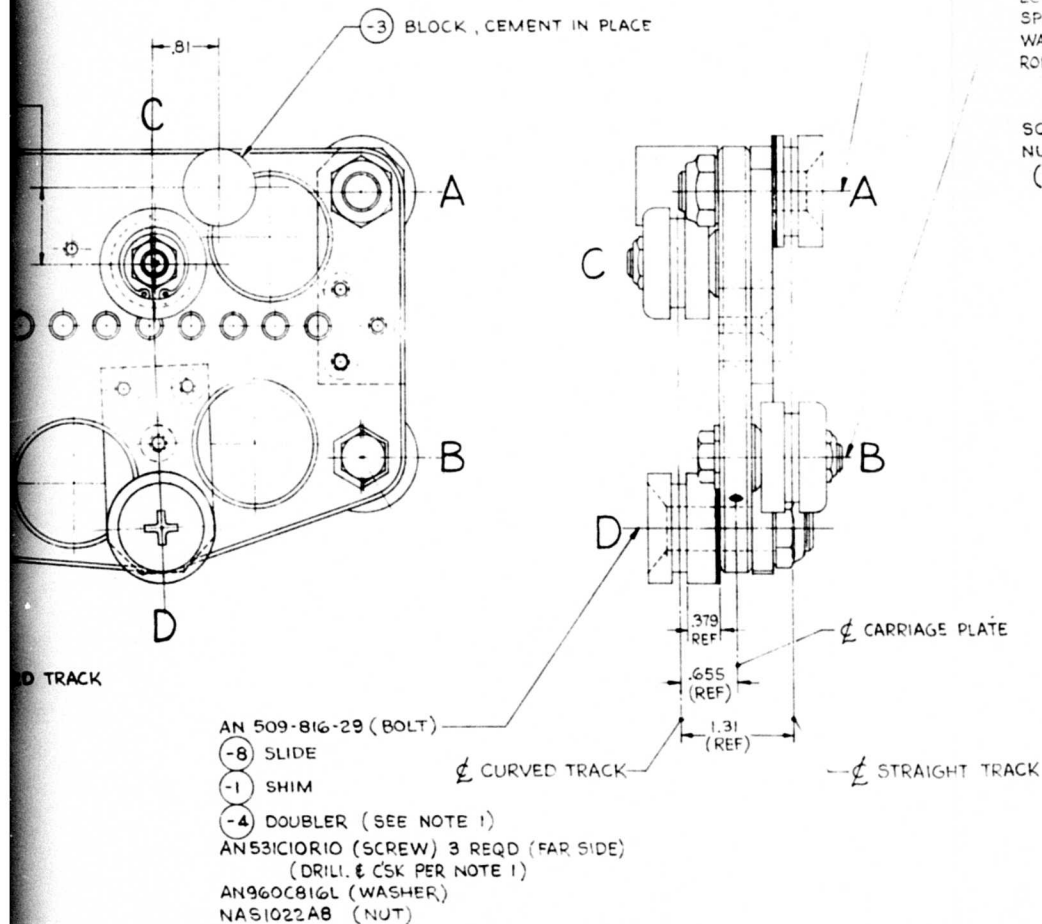
BEARING-BALL (AN20IKP5A) 2 REQD., AND

RING-RETAINING (NAS50-91) 2 REQD.]

SCREW-SET (AN565DBH14)

NUT (AN364-524)

(TYP 4 PLACES AT B, C, E, & H)



AN 509-816-29 (BOLT)

(-8) SLIDE

(-1) SHIM

(-4) DOUBLER (SEE NOTE 1)

AN53ICIORIO (SCREW) 3 REQD (FAR SIDE)

(DRILL & C'SK PER NOTE 1)

AN960C816L (WASHER)

NAS1022AB (NUT)

SY OF HC-1-21L (LEFT HAND) SHOWN HERE, (RIGHT HAND OPPOSITE).

1. POSITION DOUBLERS AS SHOWN AND WITH BOLT HOLE ALIGNED MATCH DRILL THRU DOUBLERS & PLATE USING #19 DRILL (.166), LOCATE FROM PILOT HOLES IN DOUBLERS. COUNTERSINK 82° TO .400 DIA. IN DOUBLERS AS INDICATED (6 PLACES FAR SIDE).

NOTES:

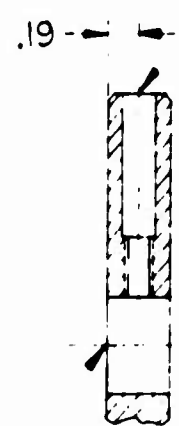
$\frac{3}{8}$ DRILL (.375) THRU
 WAS $\frac{5}{16}$ REAM THRU
 SEE NOTES 1 & 2

#29 DRILL (.136) THRU
 C/SK 100° TO .187 DIA (MAX)
 #8-32 NC-3 TAP THRU
 SEE NOTE 1

#29 DRILL (.136) THRU
 #16 C'DRILL (.177) .75
 #8-32 NC-3 TAP THRU
 SEE NOTE 1



SECT A-A



SECT B-B

$\angle \frac{1}{2}$ DRILL (.500) THRU
 WAS $\frac{5}{16}$ REAM THRU
 SEE NOTES 1 & 2

$\angle \frac{1}{2}$ DRILL (.500)
 WAS $\frac{5}{16}$ REAM
 SEE NOTES 1

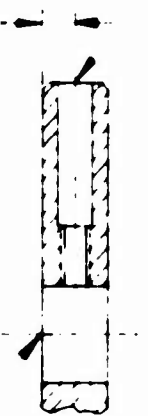
2. THESE HOLES TO BE SQUARE WITH "PLATE" V

1. CAUTION - THIS "PLATE" IS "HARD ANODIZED"
 BE NECESSARY TO FACILITATE MACHINING.

NOTES :

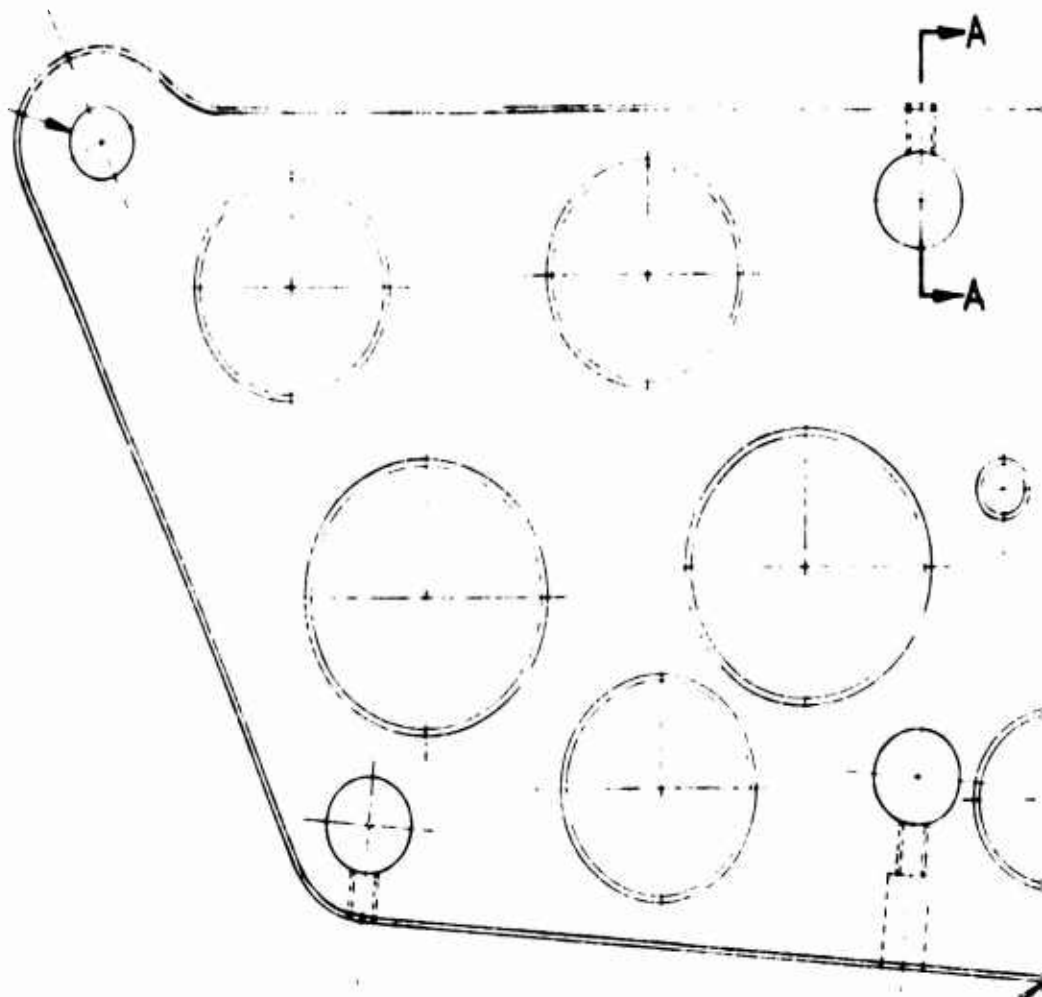
6) THRU
M. THRU
3/4"

6) THRU --
77) .75 DEEP
TAP THRU



SECTION B-B

L (.500) THRU
6 REAM, THRU
TES 1 & 2.

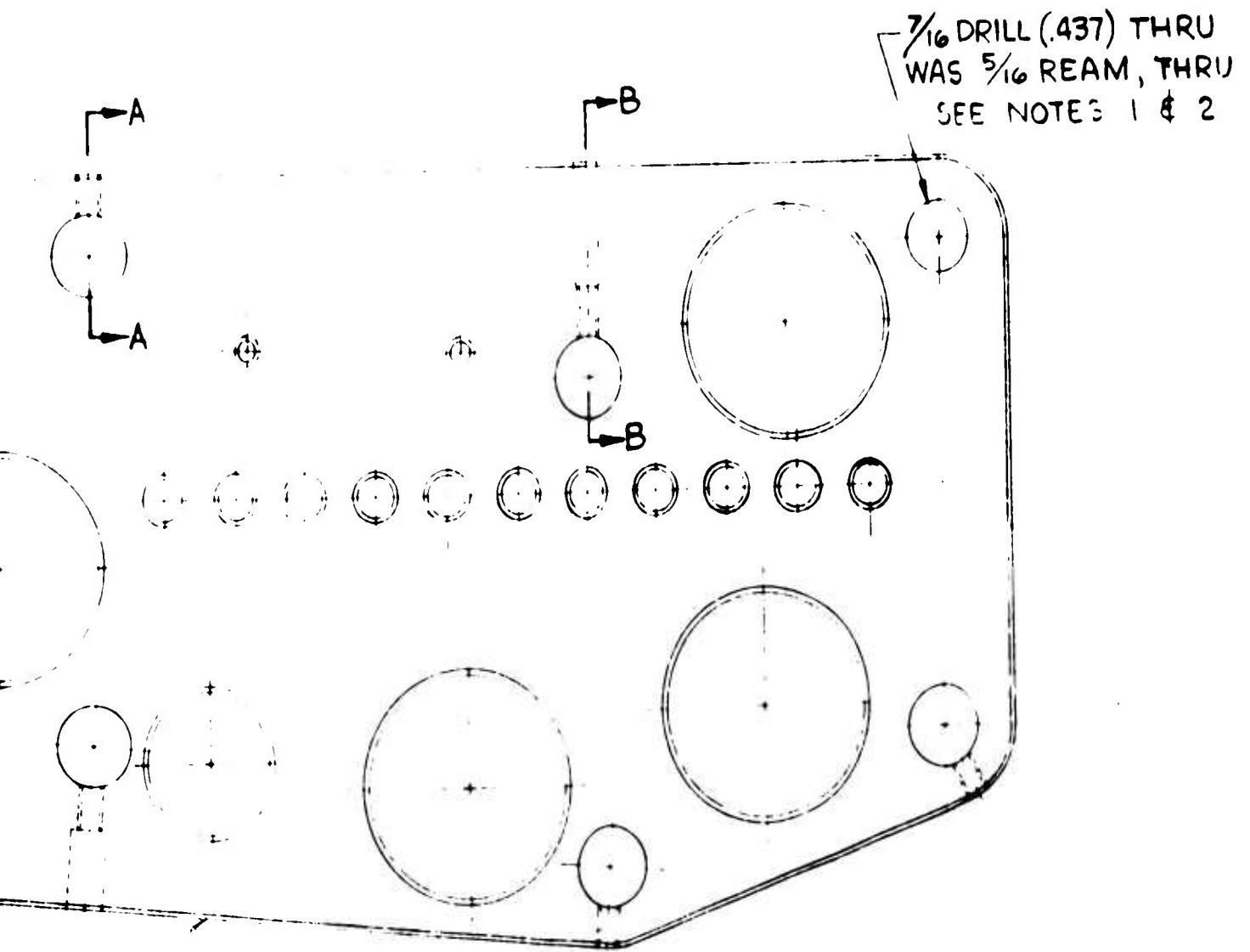


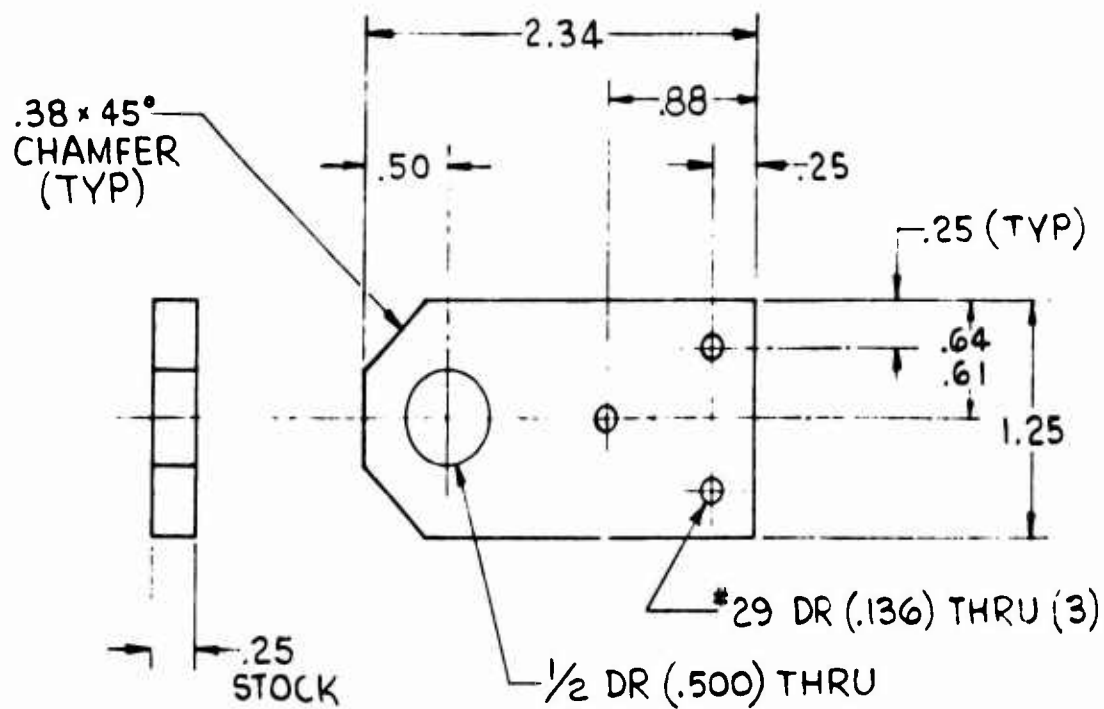
DETAIL -1

REWORK "AEROSMITH" PART #C115-5-11
(ROLLER PLATE) AS SHOWN.

PLATE" WITHIN .002 PER INCH.

"SIZED", LOCAL GRINDING MAY
FINISHING.



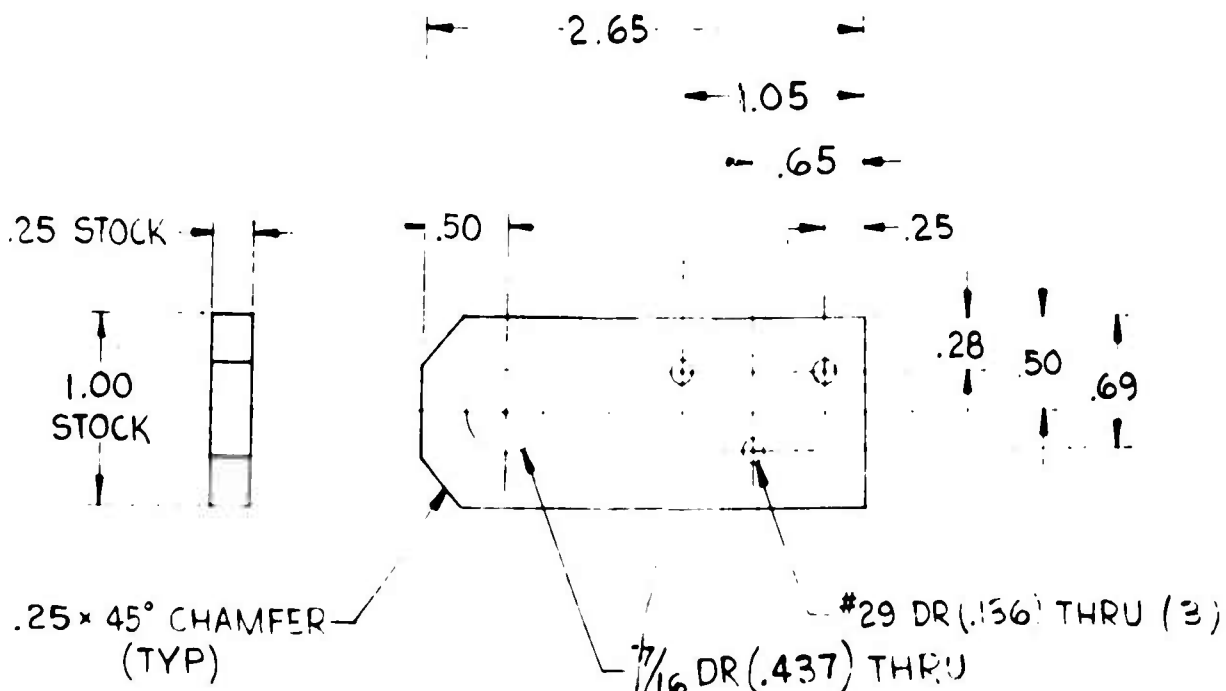


DETAIL - 4

(TYP)

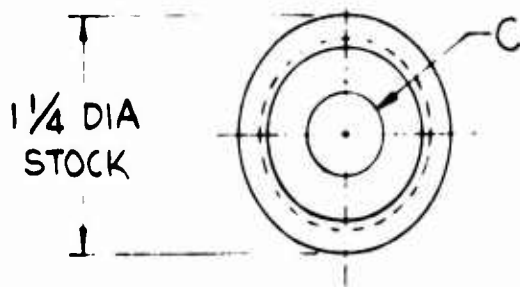
25

U (3)



DETAIL - 5

INTERNAL RADII ADJACENT TO
ANNULAR GROOVE .01 TO .02
(BREAK EXTERNAL EDGES .02 MAX)



NO CSK - 9

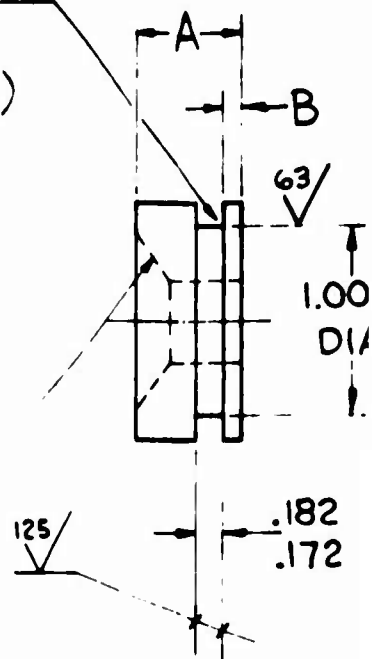
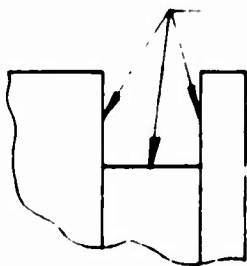


TABLE OF VARIABLES

DASH NO.	A	B	C
-6	.81	.360	3/8 DRILL (.375) THRU CSK 100° TO .770 DIA.
-7	.56	.110	7/16 DRILL (.437) THRU CSK 100° TO .900 DIA.
-8	.56	.110	1/2 DRILL (.500) THRU CSK 100° TO 1.030 DIA.
-9	.81	.360	1/2 DRILL (.500) THRU



— THESE SURFACES TO BE
LUBRICATED VIA "DRY
FILM/ELECTROFILM" PROCESS
AS PER NOTES 2 & 3 OR
EQUIV. PROCESS.
VENDOR HAS OPTION TO
APPLY LUBRICATING PROCESS
ALL OVER.

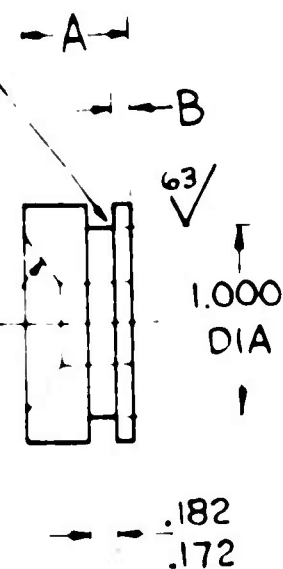
NOTES:

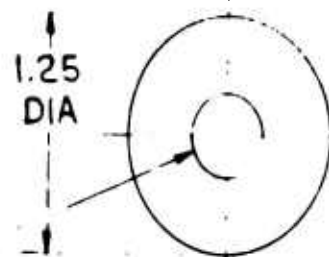
1. REMOVE ALL BURRS

2. HARD ANODIZE PER EMS-241
TYPE 1 CLASS C (.001 TO .002 THICK)
AS PER "AIR RESEARCH" SPEC OR EQUIV.

3. DRY FILM LUBRICATE PER EMS-242
TYPE 1 CLASS B (.0003 TO .0005 THICK)
AS PER "AIR RESEARCH" SPEC OR EQUIV.

(AIRRESEARCH MFG CO.
402 SOUTH 36TH STREET
PHOENIX 34, ARIZONA)





.41 DIA THRU ———
.38 FOR DETAIL - 10

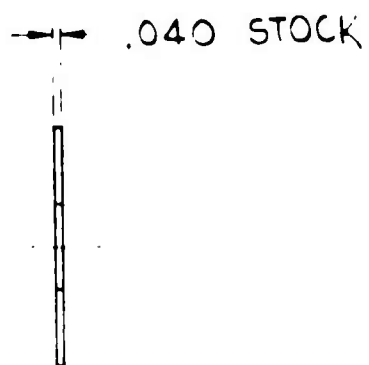
.47 DIA THRU ———
.44 FOR DETAIL - 11

.53 DIA THRU ———
.50 FOR DETAIL - 12

NOTES

1. MAT

2. MAY



NOTES -

1. MATERIAL : STAINLESS STEEL LAMINATED SHIM
.040 THICK (.005 INCREMENTS)
2. MAY BE PURCHASED FROM : - LAMINATED SHIM CO., INC
81 UNION STREET,
GLENBROOK, CONNECTICUT

INSTALLATION PROCEDURE

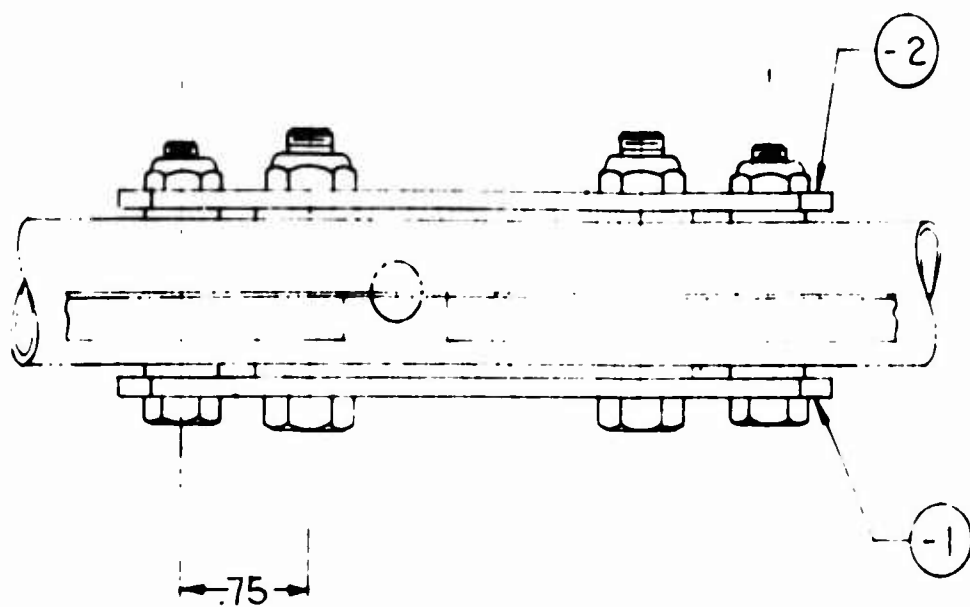
- (a) REMOVE EXISTING $\frac{3}{16}$ BOLTS AND LINE-DRILL LOCK-PIN GUIDE ASSY (C115-6-101 & -102) USING $\frac{1}{4}$ DRILL.
- (b) LOCATE -1 AS PER DWG AND DRILL THRU -1 AT LOCATIONS PER NOTE 1 USING $\frac{1}{4}$ DRILL
- (c) MATCH DRILL -2 AS PER -1
- (d) MOUNT -1 & -2 AS SHOWN AND DRILL $\frac{3}{16}$ HOLES THRU -1, TUBING & -2 AT ENDS.
- (e) INSERT #10 WASHERS AND TIGHTEN BOLTS
- (f) CAUTION — DO NOT CRUSH TUBING

LOCK-PIN G
C115-6-102
C115-6-101
(REF)

2. ZINC CHROMATE -1 & -2 AFTER FABRICATING.

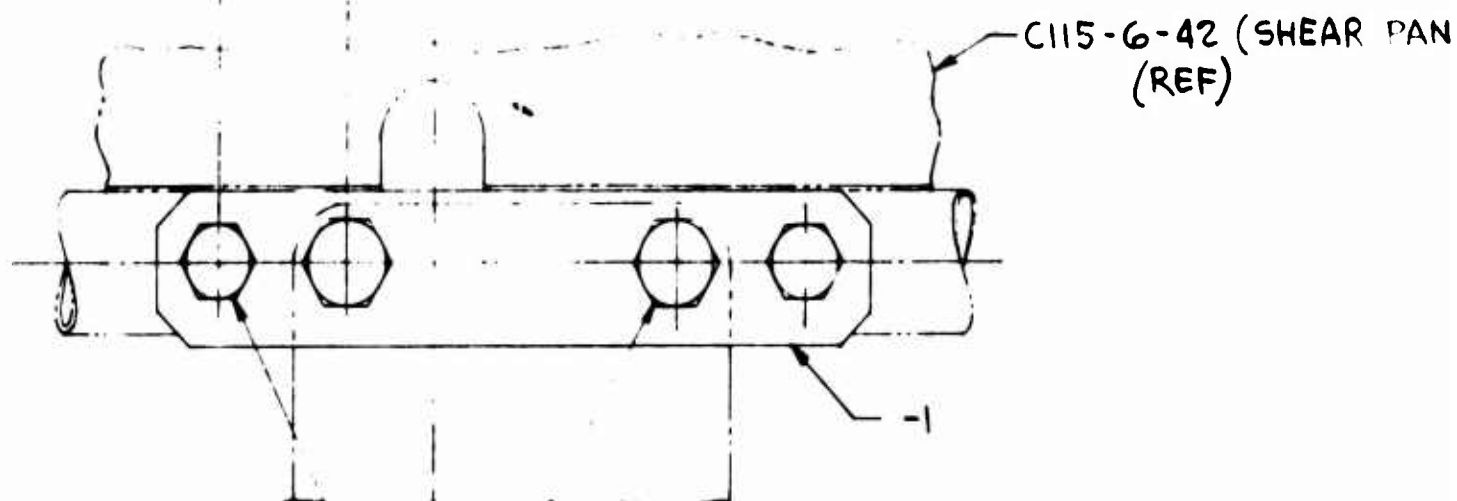
1. REMOVE BURRS & BREAK ALL EXTERNAL SHARP EDGES ON -1 & -2 ON ONE SIDE ONLY.

NOTES:



.090 ST

.8



K-PIN GUIDE
S-6-102 (RH) SHOWN
S-6-101 (LH) OPPOSITE
(REF)

1/4 DRILL (.250) THRU -1, TUBING & -2
(SEE
AN4DD13A BOLT
NAS1022D4 NUT
(2 PLACES)

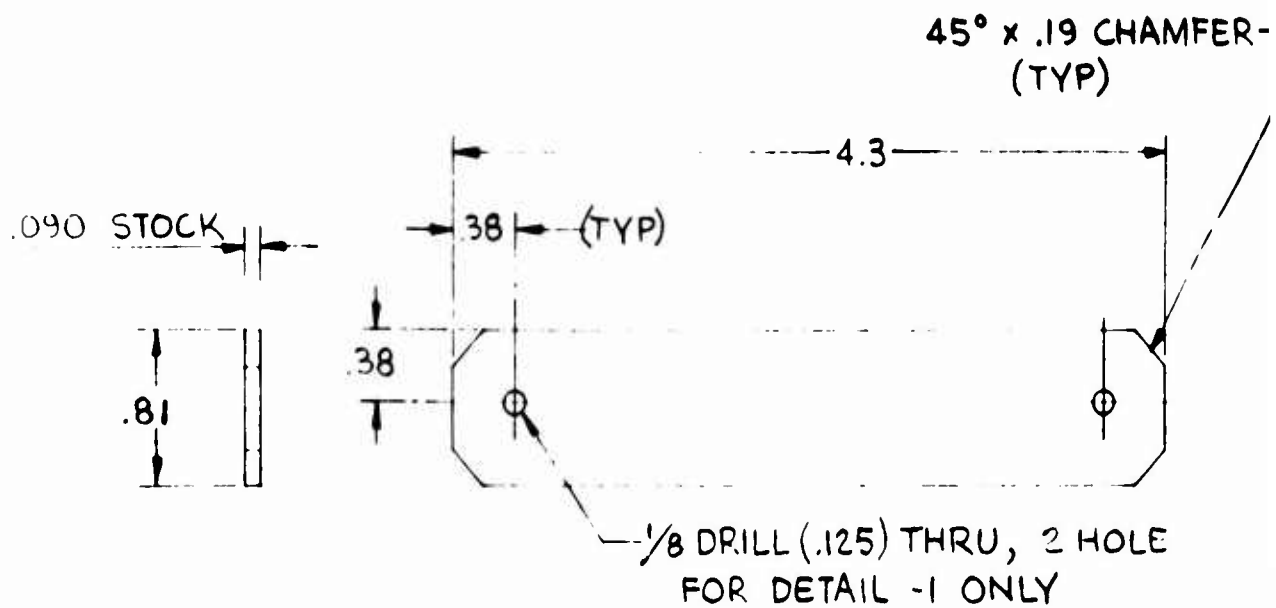
G.

SHARP EDGES

3/16 DRILL (.187) THRU -1, TUBING & -2
(SEE
AN3DD12A BOLT
AN96OD10 WASHER (2 REQD)
NAS1022D3 NUT
(2 PLACES)

1

2



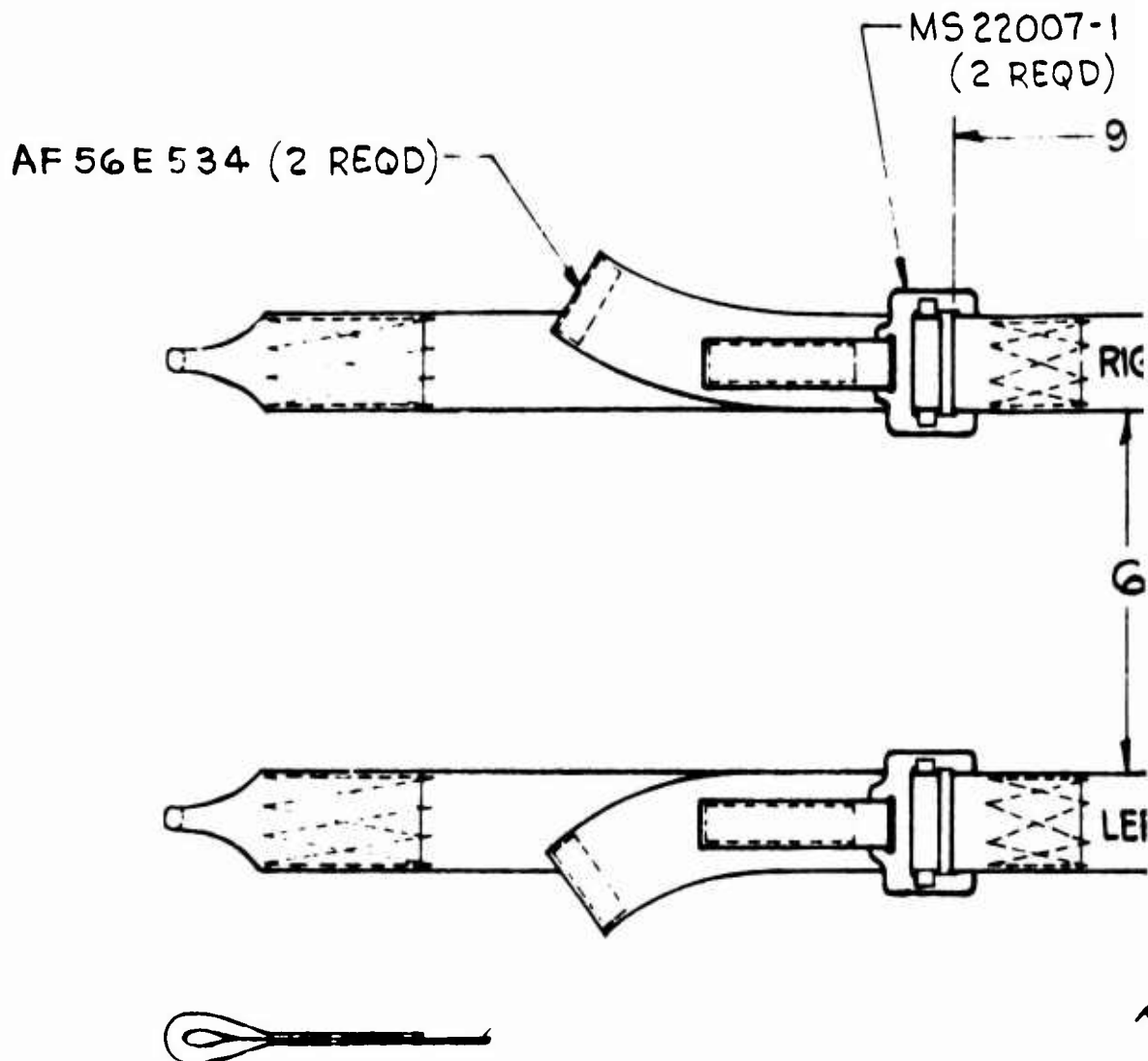
DETAIL -1 (SHOWN)

DETAIL -2 SAME AS -1 EXCEPT
1/8 HOLES OMITTED

5-6-42 (SHEAR PANEL)
(REF)

NG & -2

& -2

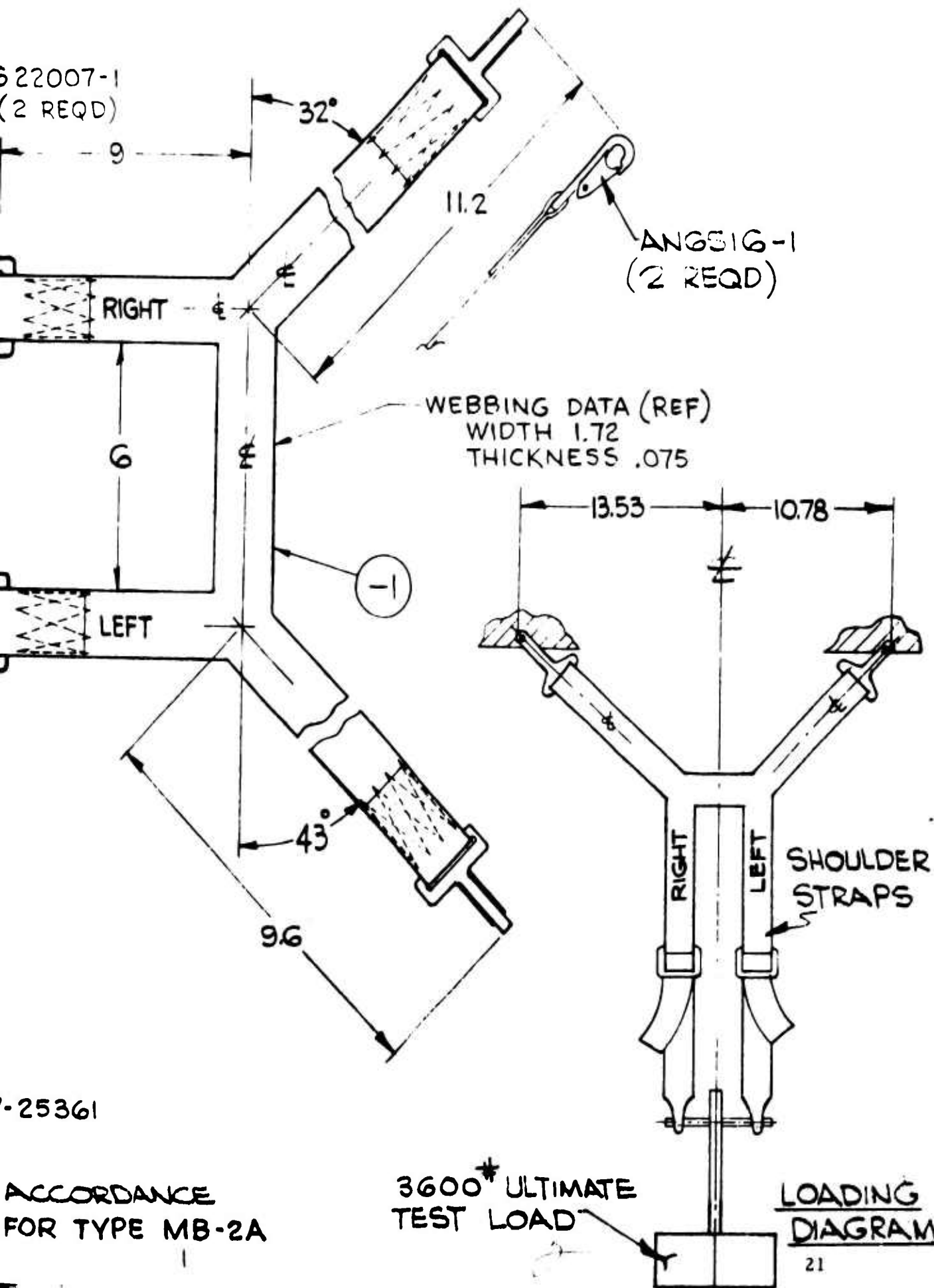


2. DACRON WEBBING TYPE II PER SPEC MIL-W-25361
COLOR- SEA GREEN #1001 .

1. STRENGTH REQUIREMENTS SHALL BE IN ACCORD
WITH SPEC. MIL-H-5364 U.S. AIR FORCE FOR TYP

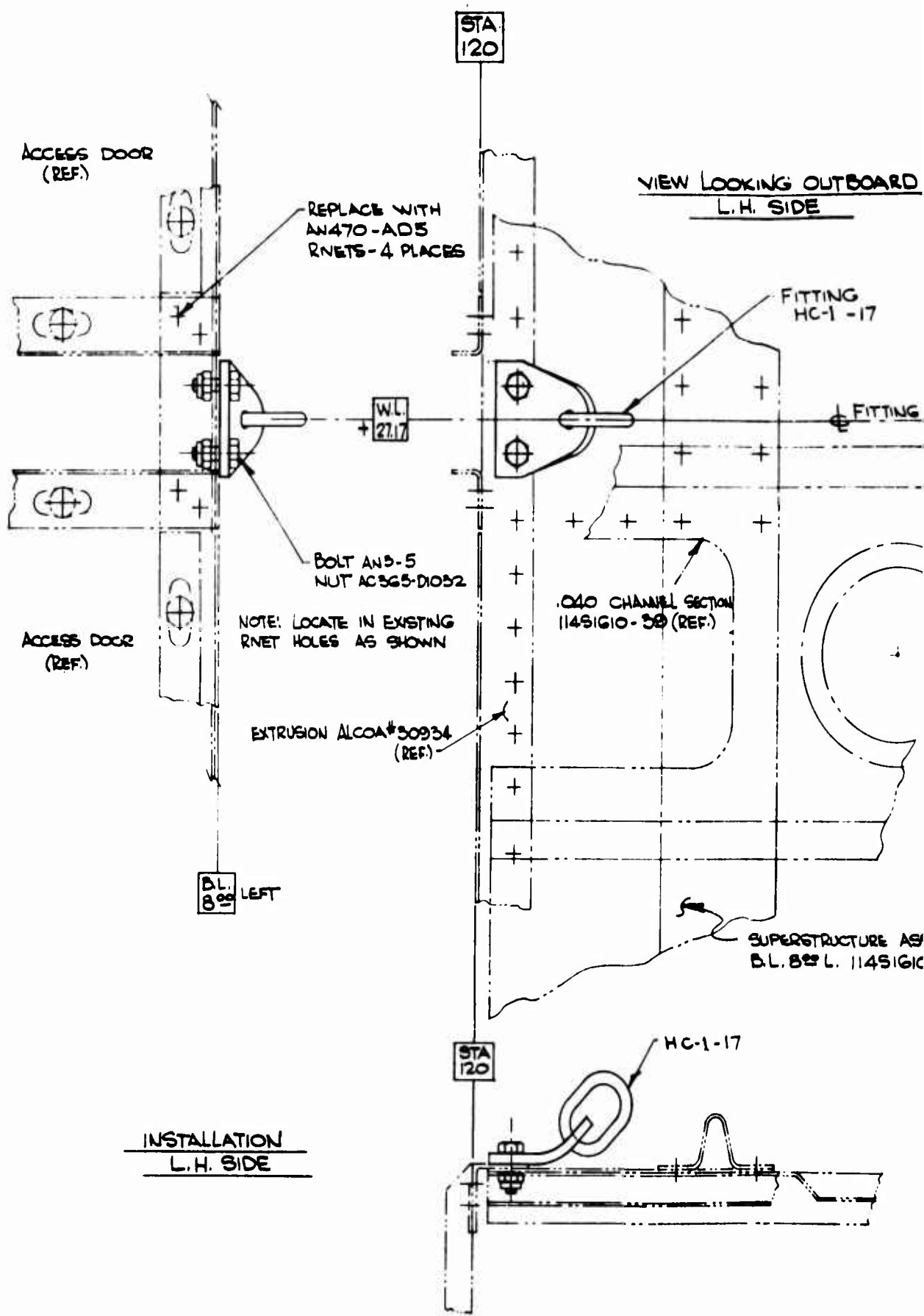
NOTE:

622007-1
(2 REQD)



-25361

ACCORDANCE
FOR TYPE MB-2A



KG OUTBOARD
SIDE

FITTING
HC-1 -17

FITTING

UPPERSTRUCTURE ASSEM
X.L. 800 L. 114S1G10(REF.)

VIEW LOOKING OUTBOARD
R. H. SIDE

REPLACE EXISTING RIVET
WITH AN3-5 BOLT &
AC365-D1032 NUT

CAP STRIP
AL AL EXTRUSION
AND10134-1G04(REF.)

FITTING
HC-1 -18

BEAM ASSEM
114S1105 (REF.)
(WEB .025)

BOLT AN3-6
NUT AC365-D1032
WASHER AN260-1032
3 REQ EA.
NOTE: LOCATE IN EXISTING
RIVET HOLES AS SHOWN

STIFFE
ANDIC

STA
120

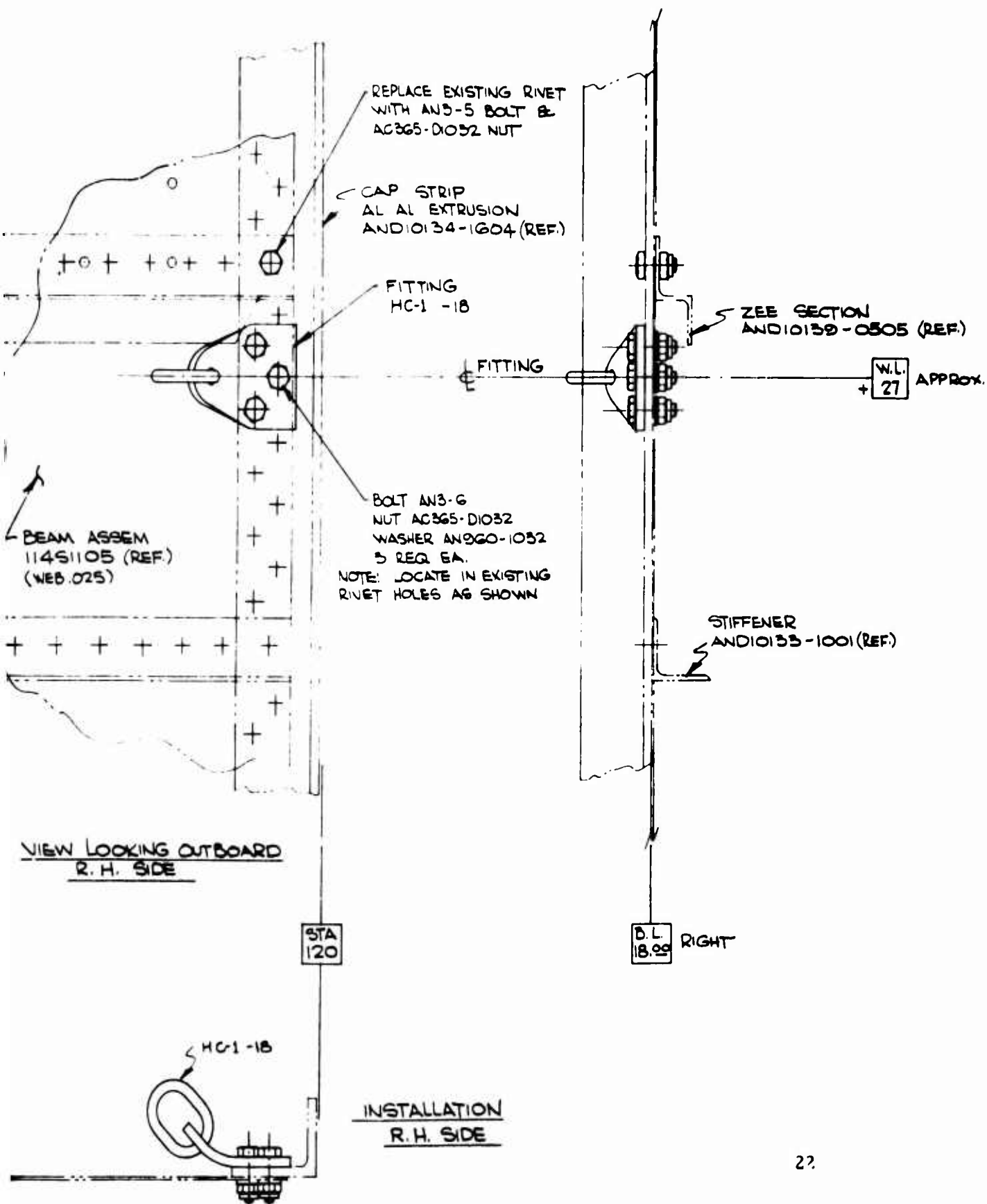
B.L
18.25

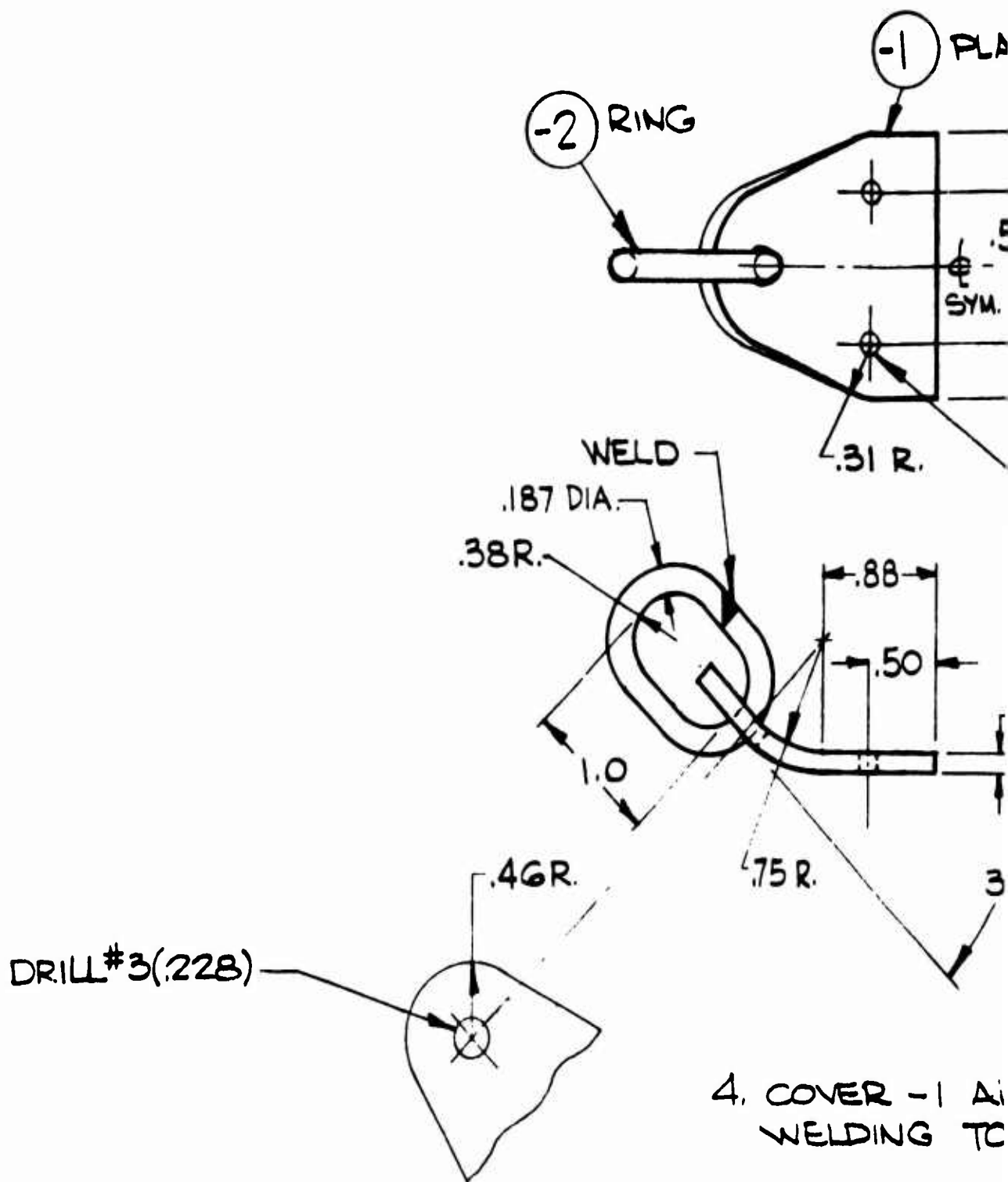
RIGHT

HC-1 -18

INSTALLATION
R. H. SIDE

2



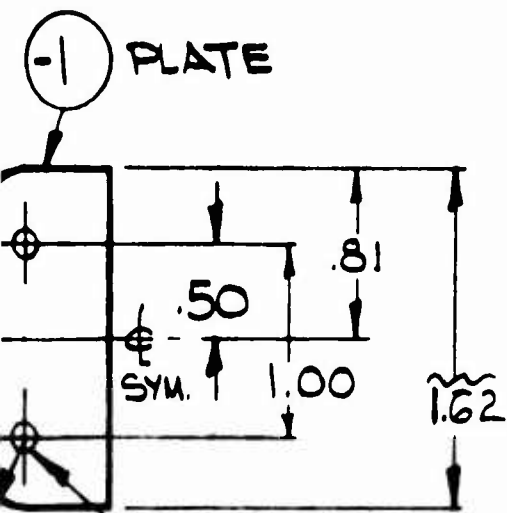


4. COVER -1 AND
WELDING TO

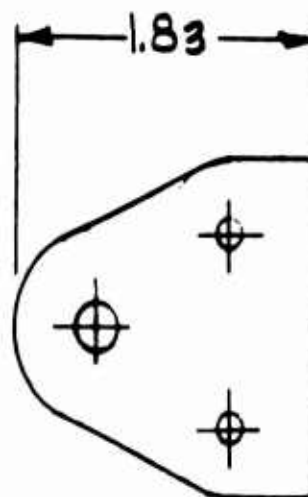
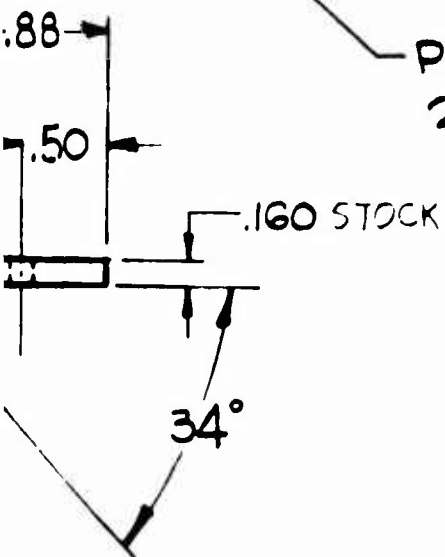
3. MAGNETIC

2. WORKMANSHIP
ACCORDANCE

1. BREAK ALL S
NOTE:



31 R.
PILOT DRILL #40 (.098)
2 HOLES



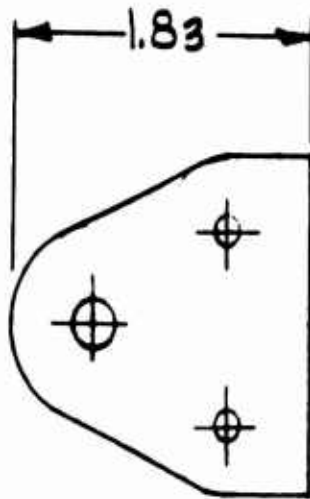
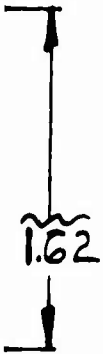
FLAT PATTERN DEVELOPMENT
OF -1 PLATE

USE -1 ALUM. PLATE WITH ASBESTOS WHEN
WELDING TO PREVENT OVERHEATING

WELDING INSPECTION SPEC. MIL-1-G868

QUALIFICATION OF WELDING SHALL BE IN
ACCORDANCE WITH SPEC. MIL-T-3021 CLASS A

ROUND ALL SHARP EDGES .02 R.



FLAT PATTERN DEVELOPMENT
OF -1 PLATE

PILOT DRILL #40 (.098)
2 HOLES

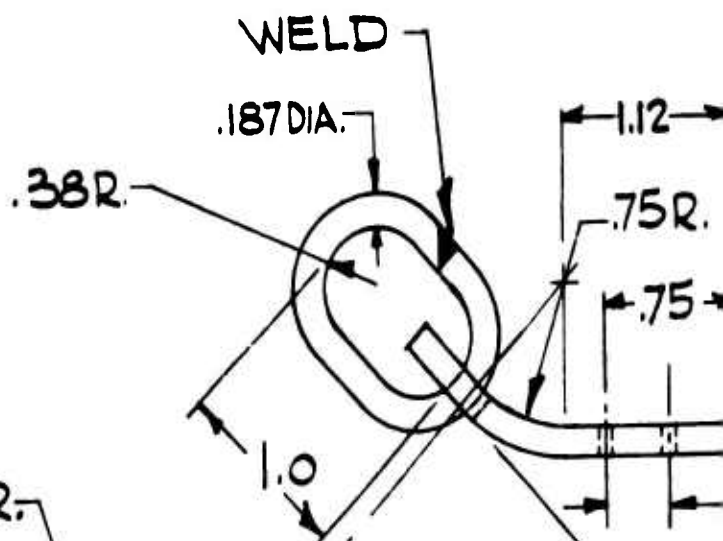
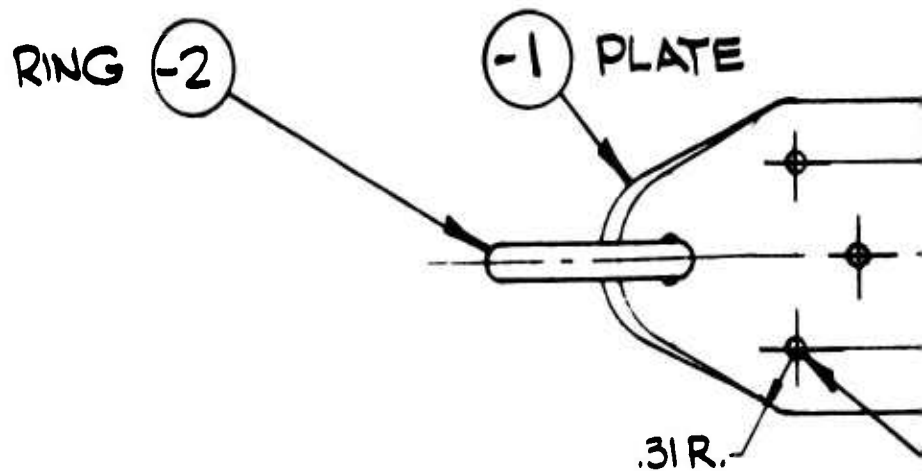
K

TE WITH ASBESTOS WHEN
IT OVERHEATING

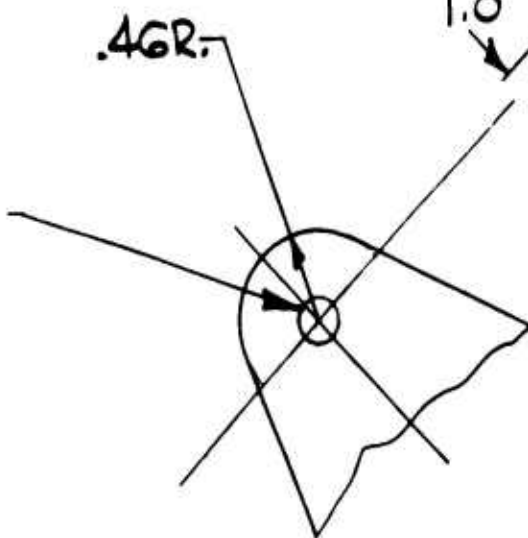
ON SPEC. MIL-I-6868

ELDING SHALL BE IN
SPEC. MIL-T-5021 CLASS A

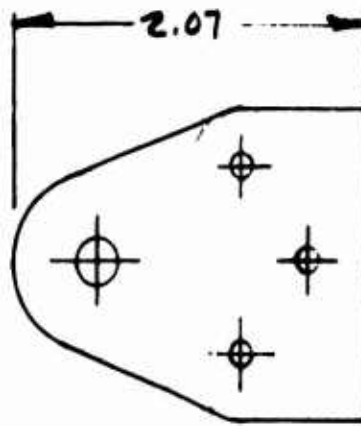
DGES .02 R.



DRILL #3 (.228)



4. COVER WHEN
 3. MAGN
 2. WORK ACCOR
 1. BREAK
- NOTE:



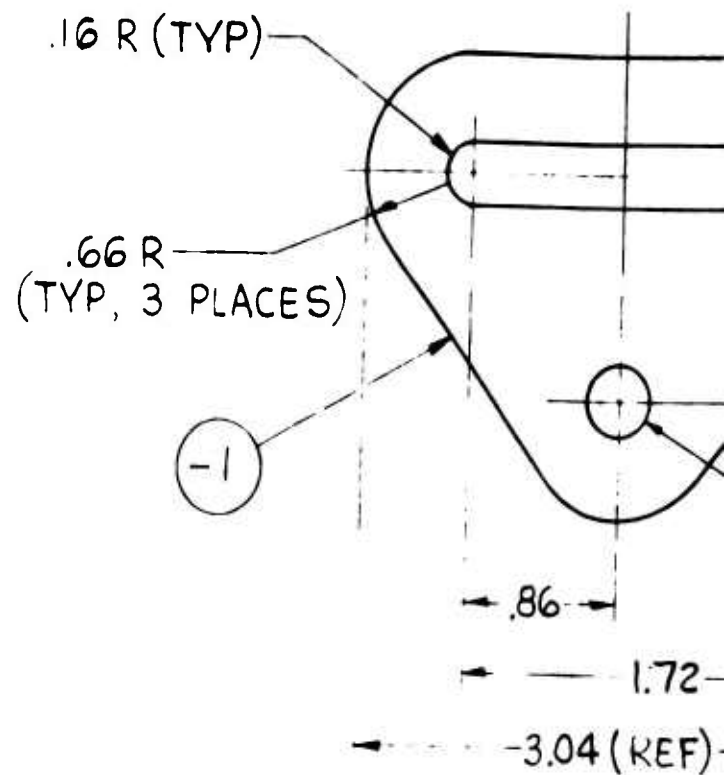
10(.098)

FLAT PATTERN DEVELOPMENT
OF -1 PLATE

TH ASBESTOS
OVERHEATING

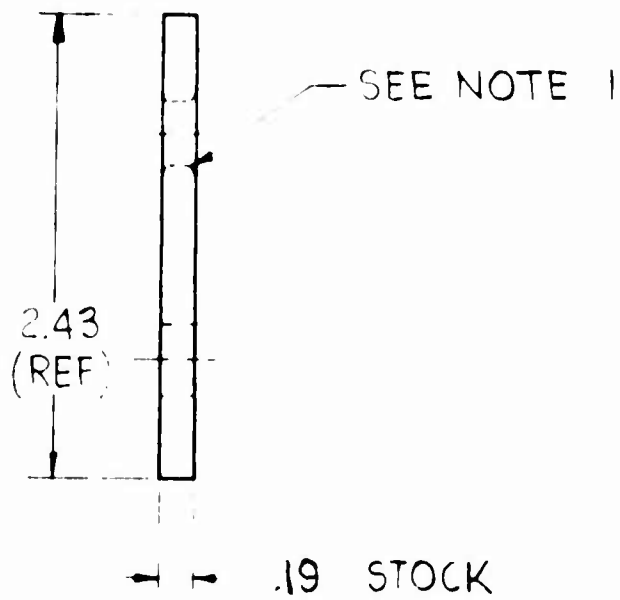
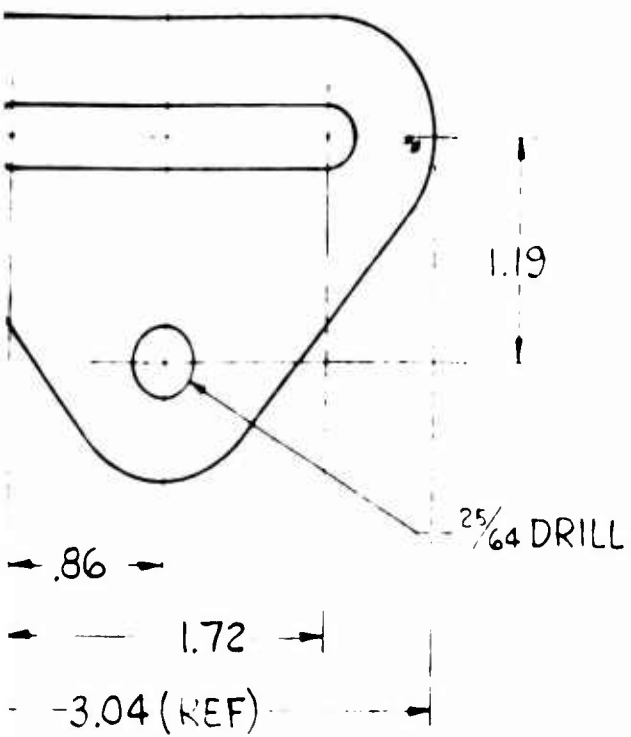
1-6868

G SHALL BE IN
T-5021 CLASS A.
.02 R.

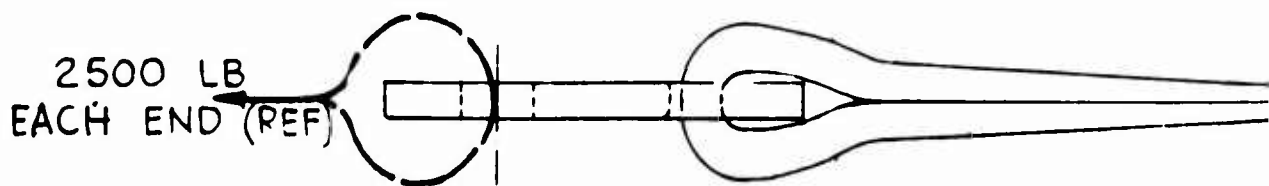
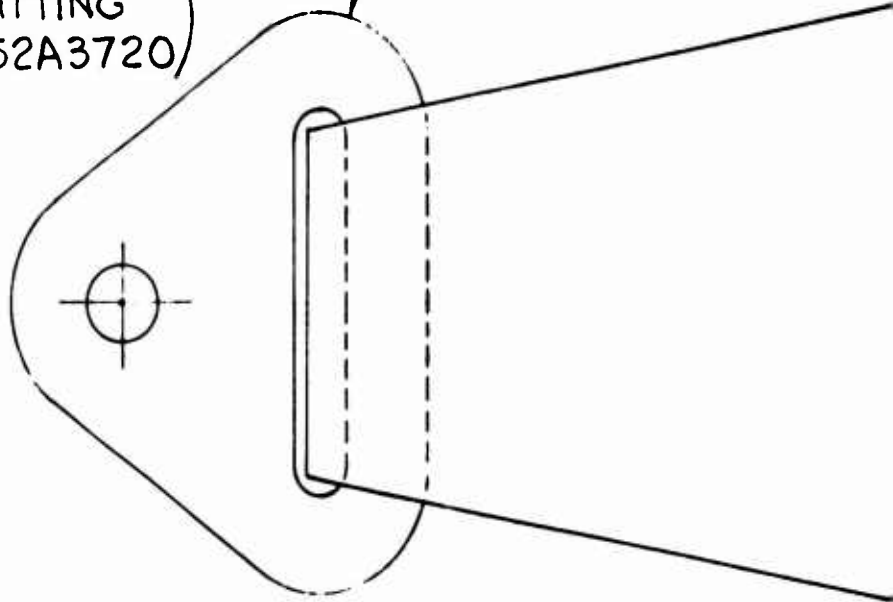


NOTES:

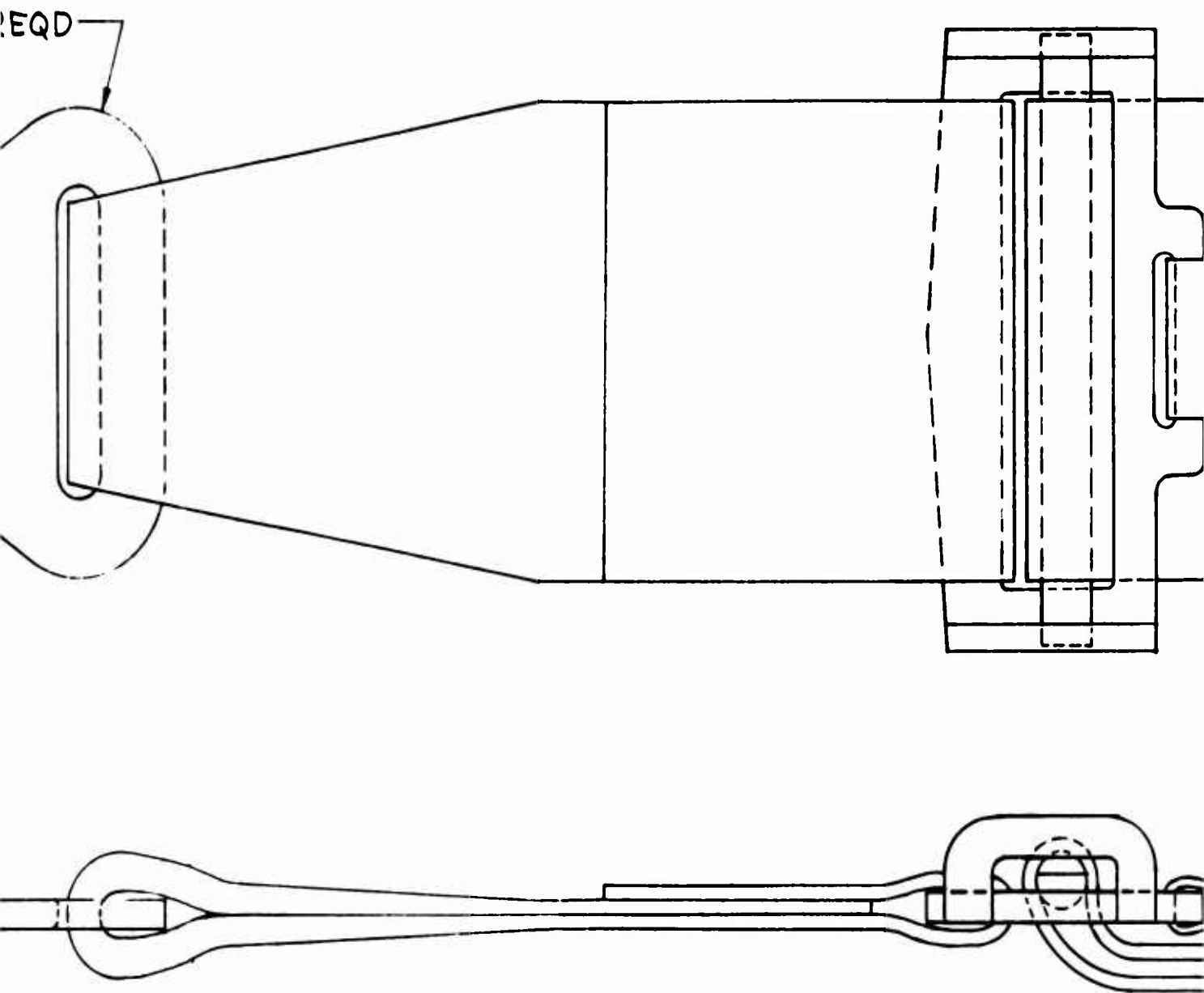
1. BREAK ALL SHARP EDGES,
.04 MIN. AROUND SLOT.



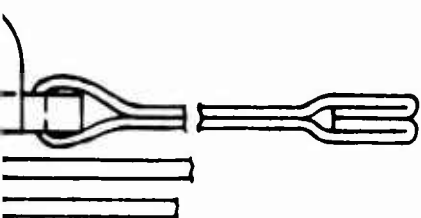
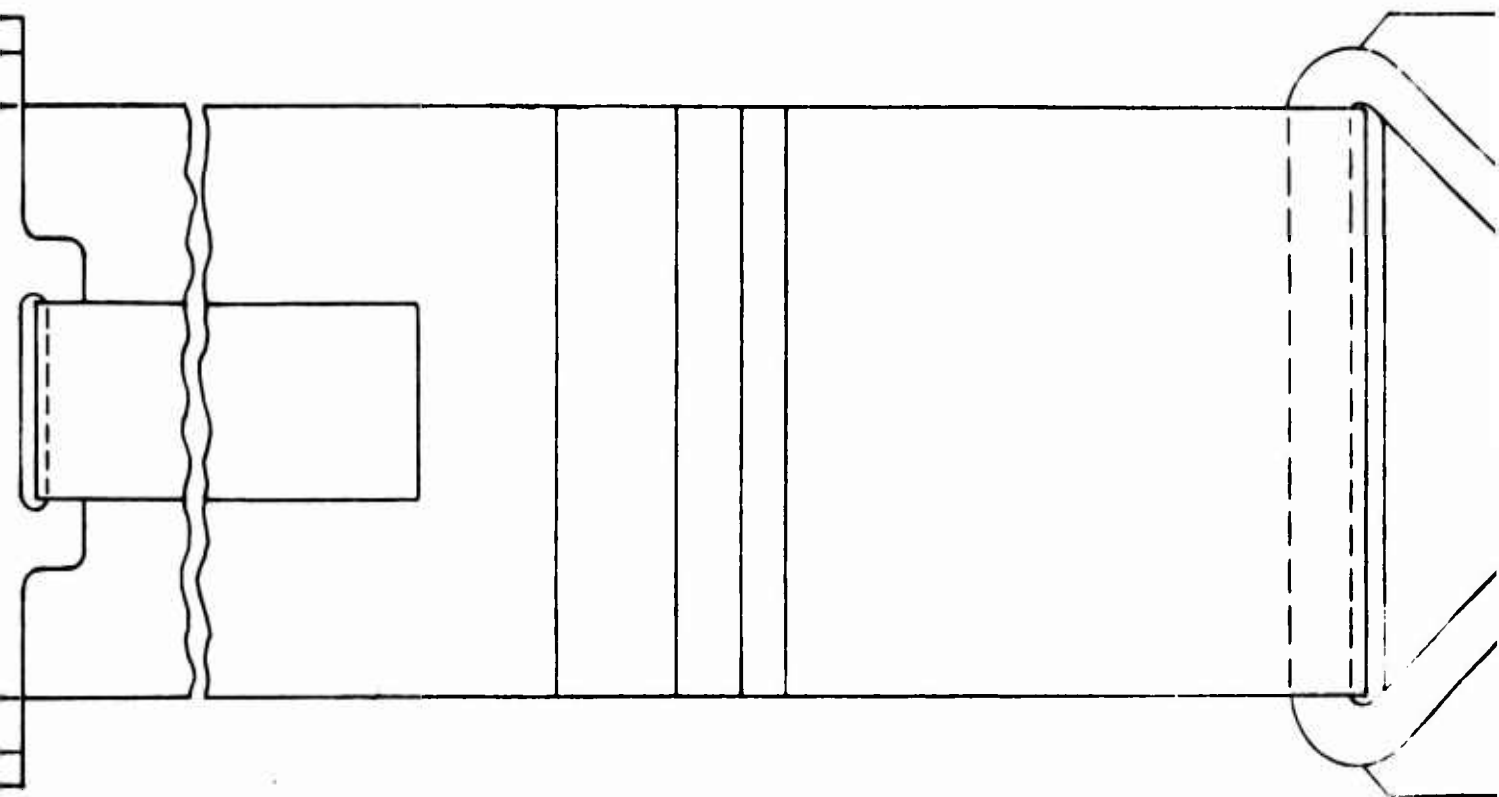
HC-1-22 (END FITTING) 2 REQD
(ALTERNATE END FITTING
U.S. AIR FORCE #52A3720)



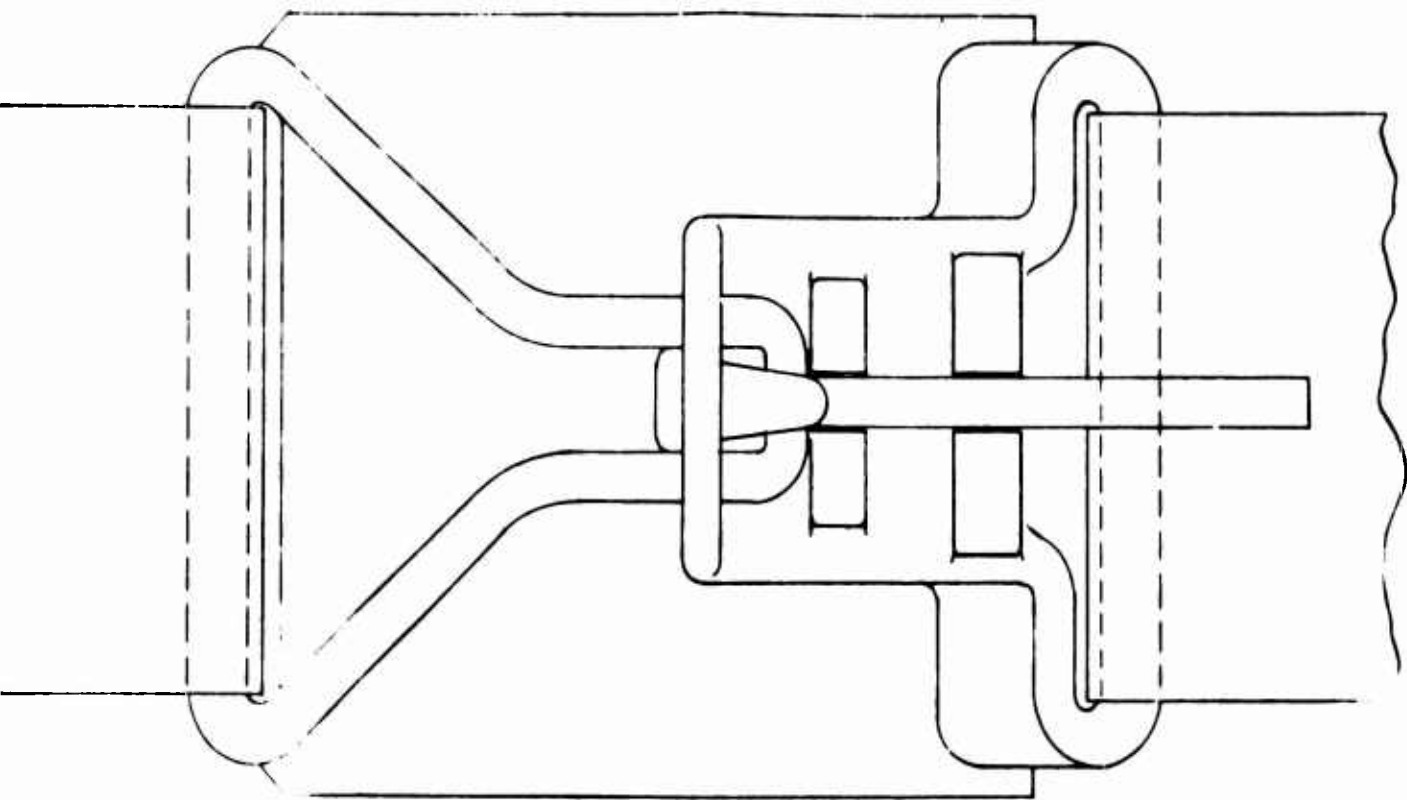
THIS BELT SAME AS U.S. AIR FORCE DW
REPLACES ANG516-1 (2 PLACES)

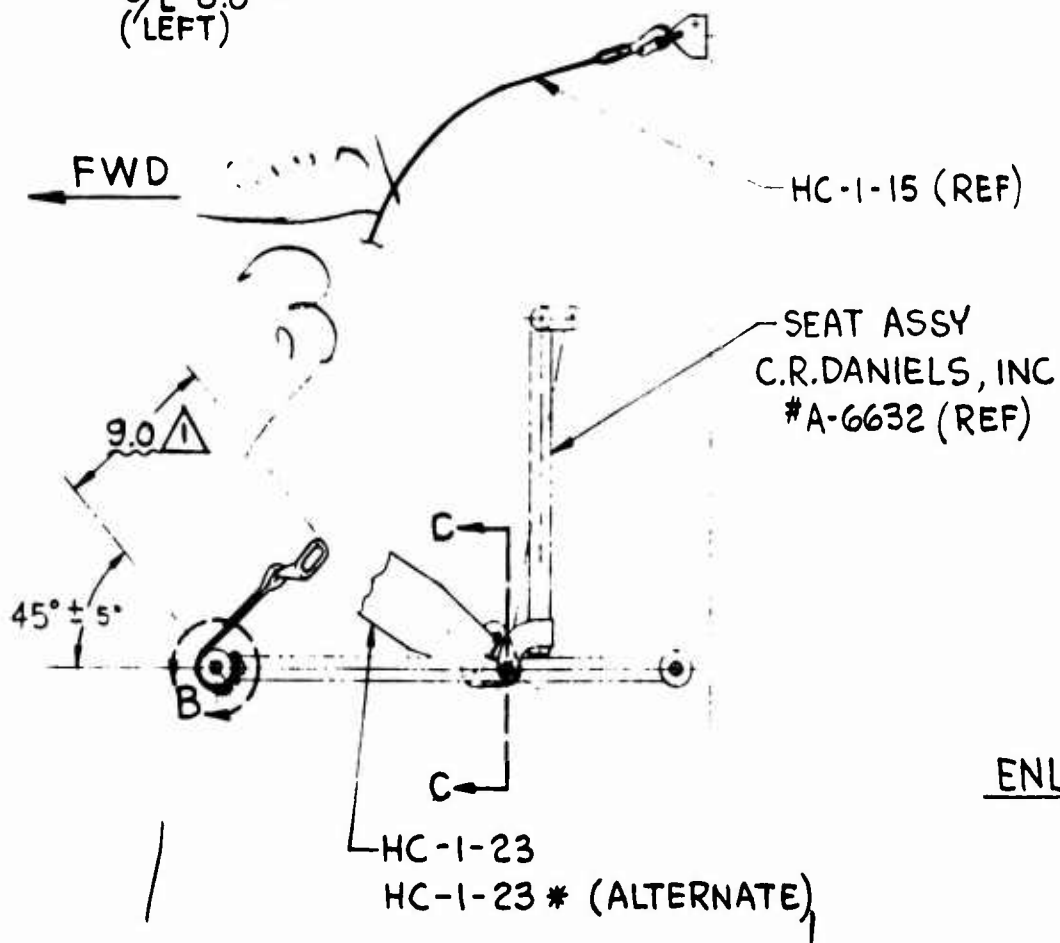
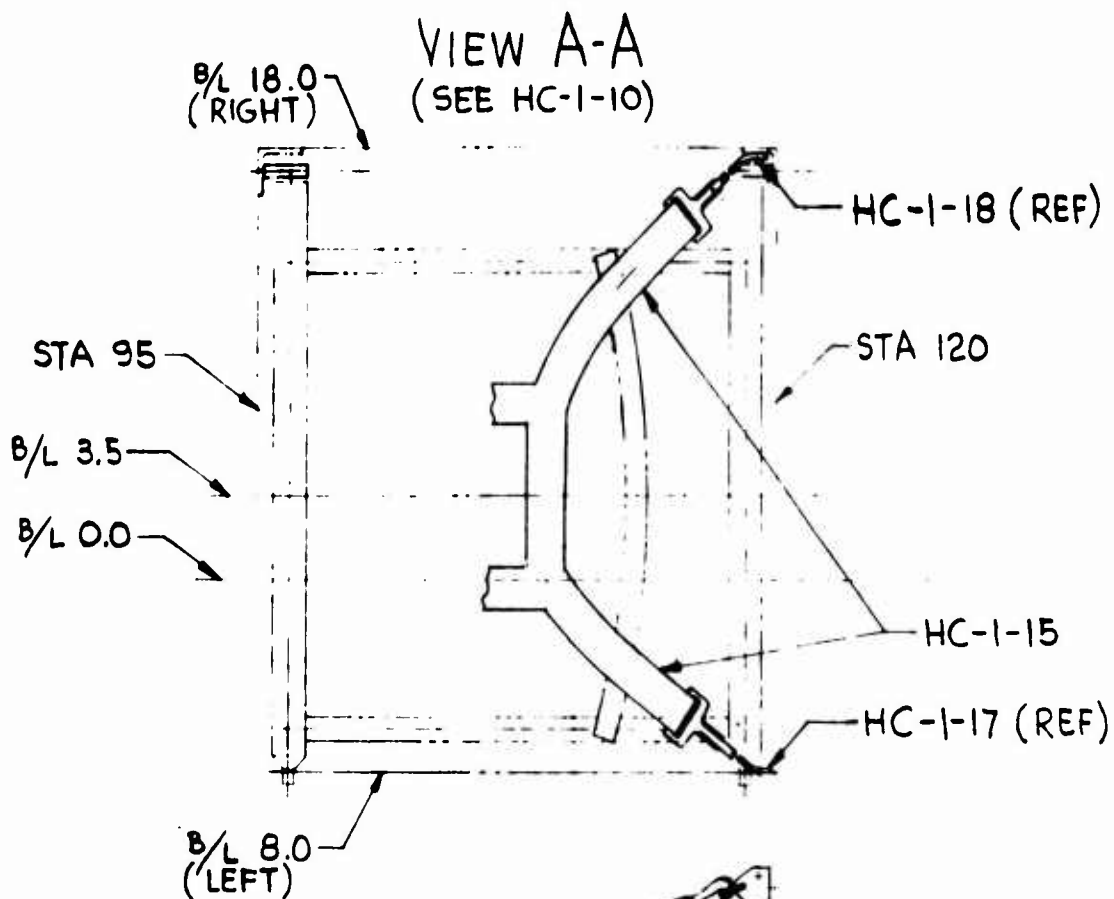


AS U. S. AIR FORCE DWG NO. 49F6550 EXCEPT
16-1 (2 PLACES)

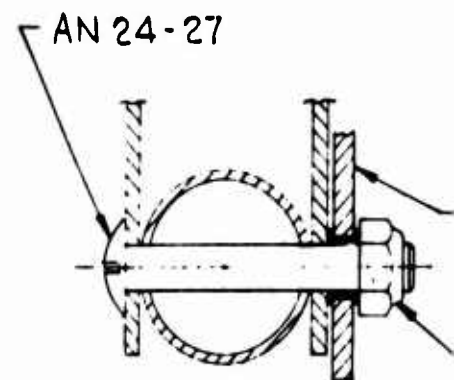
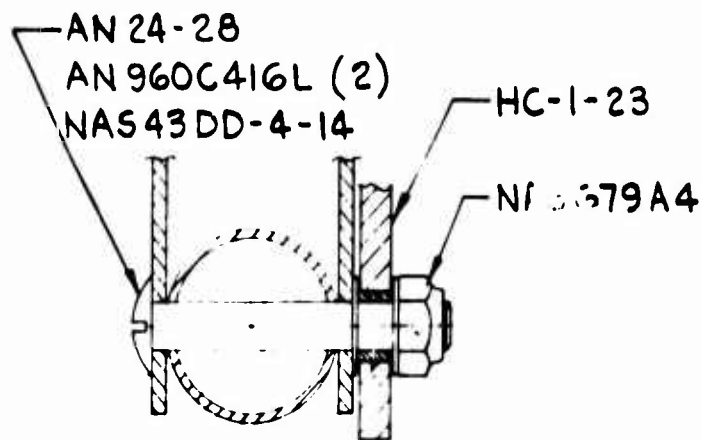


T END FITTING HC-1-22





ENLARG



ENLARGED PARTIAL SECT C-C

PREFERRED INSTALLATION

SCALE ~ 1/4

(TYP, 2 PLACES)

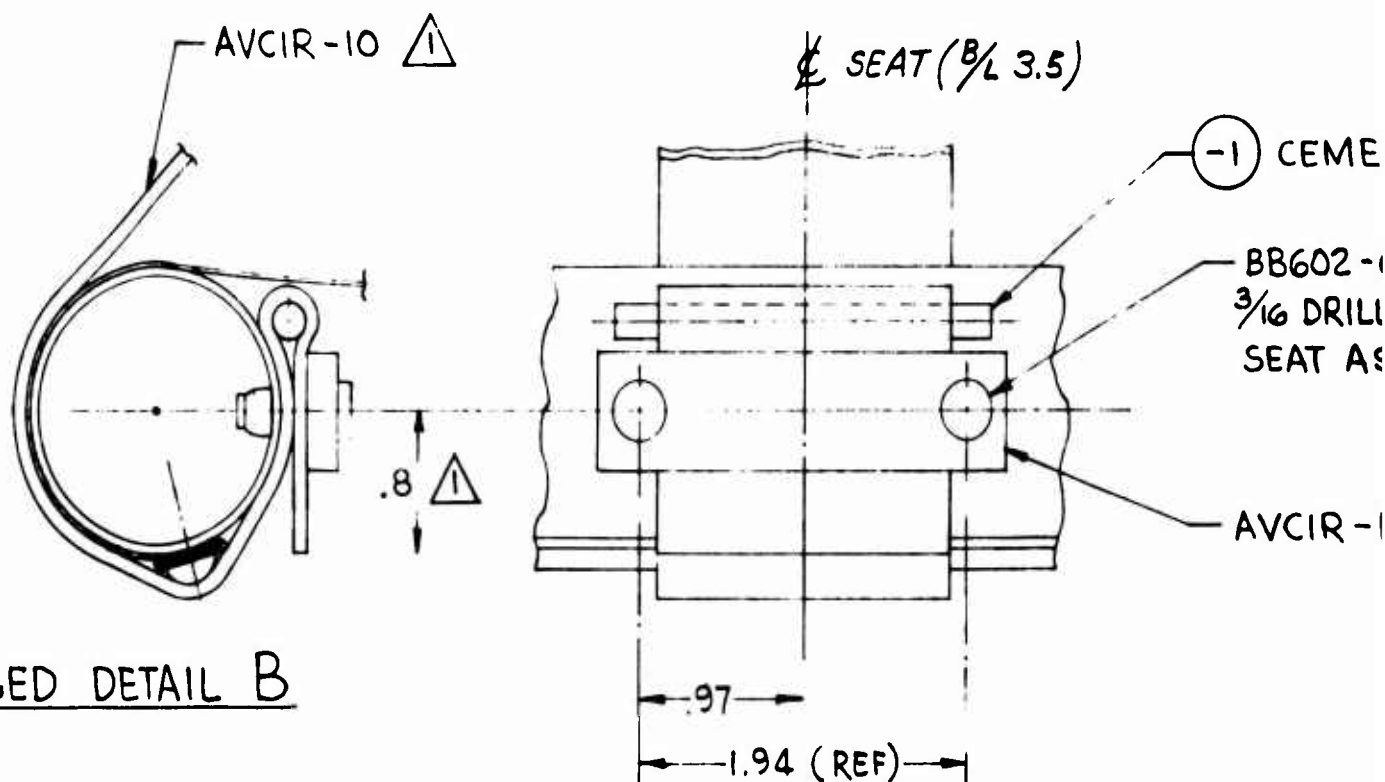
LEFT HAND SHOWN, RT HAND OPPOSITE

ENLARGED PARTIAL SECT

(ALTERNATE INSTALLATION)

SCALE ~ 1/4

(TYP, 2 PLACES)



ENLARGED DETAIL B

1 2

25

1

NOTES:

△ "L" LENGTH AS PER AVCIR-10 DWG, TO BE 13.0 INCHES (TRIM

2. MAY BE PURCHASED FROM :- "HI-SHEAR" CORP, 2600 WEST 247

HC-1-23 *

(ALTERNATE)

NAS679A4

CT C-C

ATION) -

)

EMENT TO STRAP

502-6-10 △ 2 (OR EQUIV.)

DRILL THRU ONE SIDE OF
AT ASSY (2 PLACES)

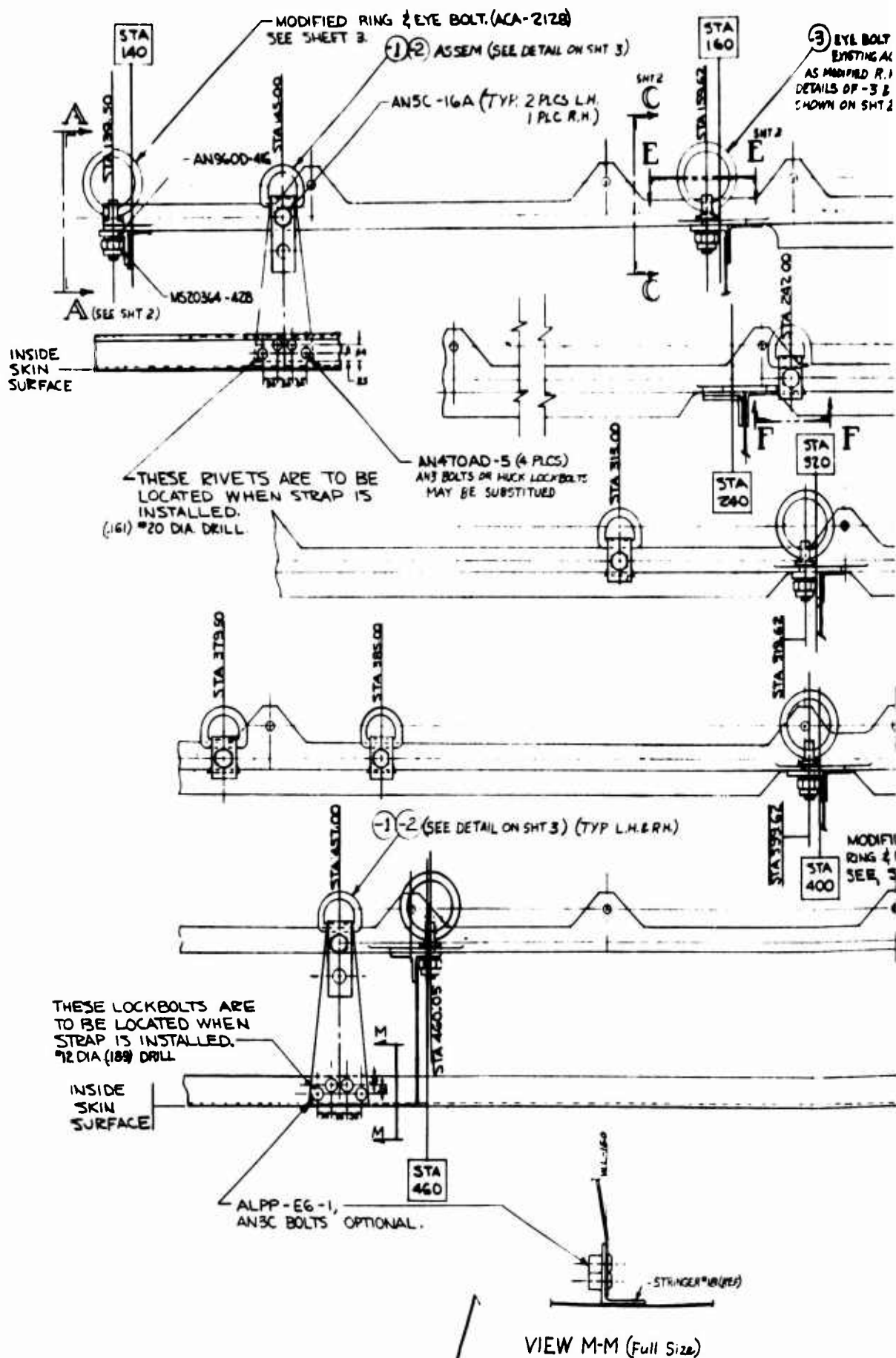
IR-15

PER AVCIR-10 DWG, TO BE 13.0 INCHES (TRIM TO SUIT & SEAR).

SED FROM :- "HI-SHEAR" CORP, 2600 WEST 247TH STREET, TORRANCE, CALIF

{

1. 4



1/2" EYE BOLT - L.H. SIDE
EXISTING ACA-212B
MODIFIED R.H. SIDE
3 OF -3 & ACA-212B
ON SHT 2

(-2)
INSTALLED AS SHOWN
AT 17 PLCS ON L.H. & R.H. SIDE

AN5C-16A (TYP. 17 PLG L.H. & R.H.)

B (SEE SHT 2)

1/4" 159-29 (REF) SEAT
K' SUPPORT.

ADDITIONAL
RIVETS.
#20 DIA. DRILL

SEE NOTE 2

MODIFIED ACA-212B
RING & EYE BOLT.
SEE SHEET 5.

AN960D-4K

MS20364-42B

.50 APPROX. LOCATION
OF NEAREST RIVET.

DRILL OUT EXIST-
ING RIVET WITH
LETTER 'F' DRILL

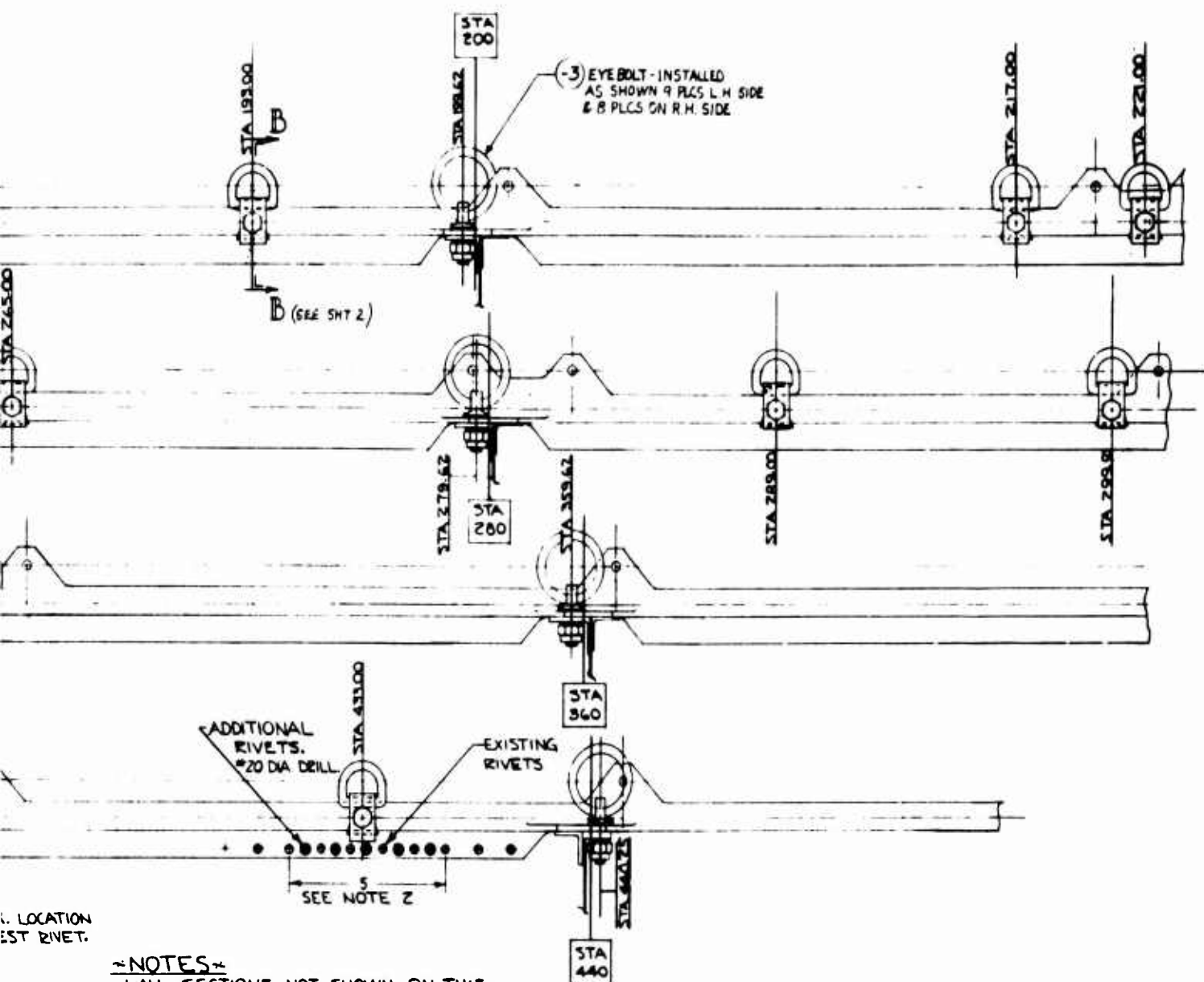
SECTION D-D

TYP. L.H. & R.H.

NOTES

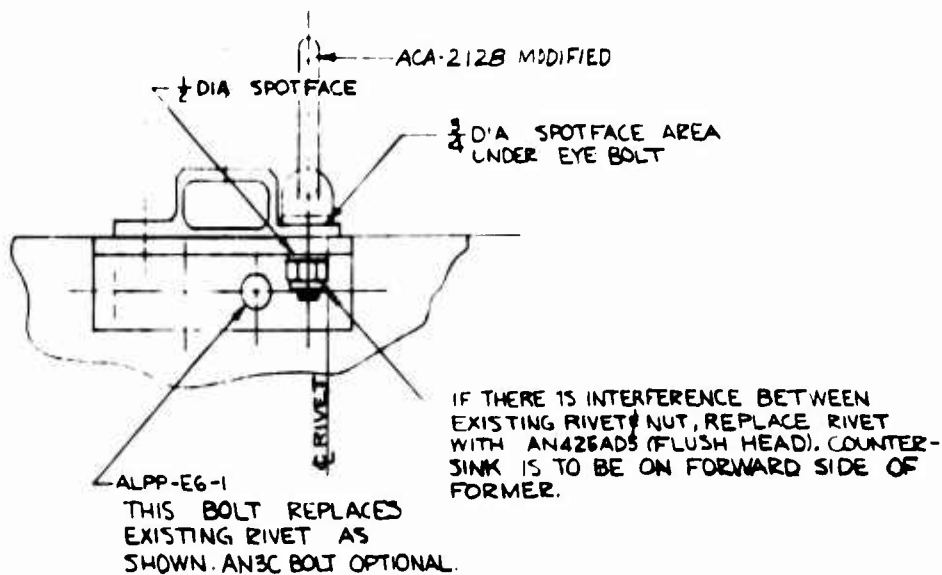
1. ALL SECTIONS NOT SHOWN ON THIS SHEET ARE SHOWN ON SHEET 2
2. ADD 5-AN470ADS RIVETS AS SHOWN. THE PATTERN IS TO BE SYMMETRIC ABOUT TIE-DOWN BOLT. TYPICAL AT STATIONS 195, 217, 221, 265, 289, 299.50, 313, 397, 341, 385, 409, 419.50 AND 433.
3. LEFT HAND SHOWN, RIGHT HAND SIDE OPPOSITE EXCEPT AS SHOWN. SEE SECTION E-E SHEET 2.
4. WHERE DETAIL ③ FALLS AT FORMERS, REAM EXISTING R3001 (1/4" HUCK BOLTS) AND DRILL HOLE WITH LETTER "O" DRILL AND INSTALL BOLT. WHERE 1/4" EYE BOLT FALLS AT FORMER EXISTING R3001 HUCK BOLTS AND DRILL OUT WITH LETTER 'F' DRILL AND INSTALL EYE BOLT EXCEPT STATION 482.
5. WHERE BELT ATTACHMENT STRAPS FALL INTO HOLES IN MAGNESIUM EXTRUSION, DRILL OUT EXISTING HOLES WITH LETTER "O" DRILL AND INSTALL STRAPS. WHEN NEW HOLES ARE NEW STRAPS, DRILL THRU WITH LETTER "O" DRILL.
6. EQUIVALENT SCREW MAY BE USED.
7. WORKMANSHIP OF WELDING SHALL BE IN ACCORDANCE WITH SPEC. MIL-T-5021 CLASS 1

2

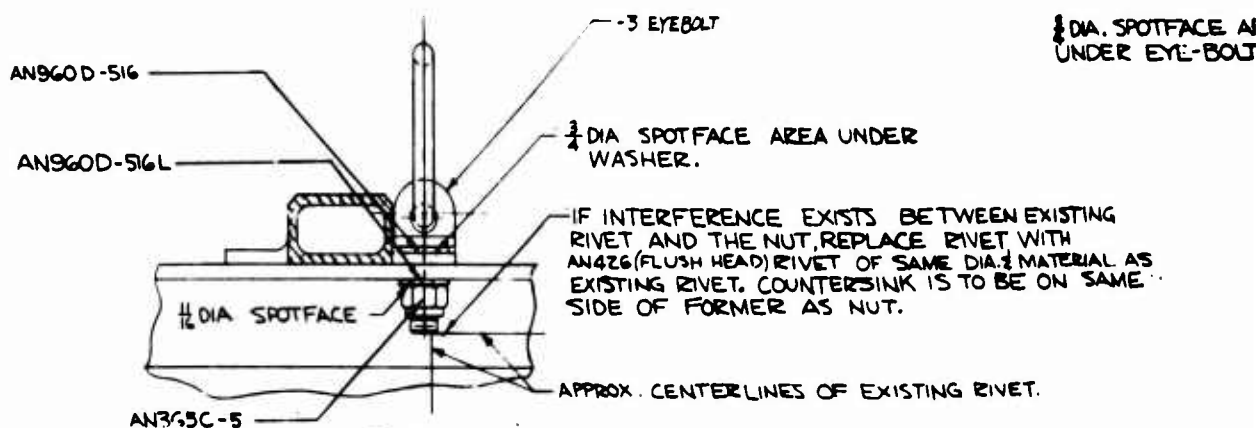
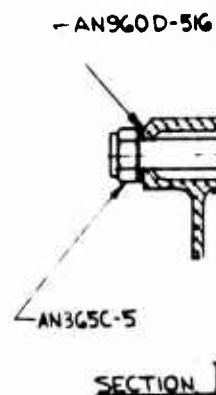


~NOTES~

1. ALL SECTIONS NOT SHOWN ON THIS SHEET ARE SHOWN ON SHEET 2.
2. ADD 5-AN470ADS RIVETS AS SHOWN. THE PATTERN IS TO BE SYMMETRIC ABOUT THE $\frac{5}{16}$ TIE-DOWN BOLT. TYPICAL AT STATIONS 169, 179.50, 193, 217, 221, 265, 289, 299.50, 313, 337, 341, 373.50, 385, 409, 419.50 AND 433.
3. LEFT HAND SHOWN, RIGHT HAND SIDE OPPOSITE EXCEPT AS SHOWN. SEE SECTION E-E SHEET 2.
4. WHERE DETAIL ③ FALLS AT FORMERS, REMOVE EXISTING R3001 ($\frac{1}{2}$ " HUCK BOLTS) AND DRILL OUT HOLE WITH LETTER "O" DRILL AND INSTALL EYE-BOLT. WHERE $\frac{1}{4}$ " EYE BOLT FALLS AT FORMERS, REMOVE EXISTING R3001 HUCK BOLTS AND DRILL OUT HOLES WITH LETTER "F" DRILL AND INSTALL EYE-BOLT. EXCEPT STATION 482.
5. WHERE BELT ATTACHMENT STRAPS FALL AT EXISTING HOLES IN MAGNESIUM EXTRUSION, DRILL OUT EXISTING HOLES WITH LETTER "O" DRILL AND INSTALL STRAPS. WHEN NEW HOLES ARE NEEDED FOR STRAPS, DRILL THRU WITH LETTER "O" DRILL.
6. EQUIVALENT SCREW MAY BE USED.
7. WORKMANSHIP OF WELDING SHALL BE IN ACCORDANCE WITH SPEC. MIL-T-5021 CLASS A.



SECTION A-A
STATION 140 ONLY



SECTION C-C

THE NOTES OF THIS SECTION ARE TYPICAL FOR ALL STATIONS WHERE -3 EYE-BOLT IS USED.

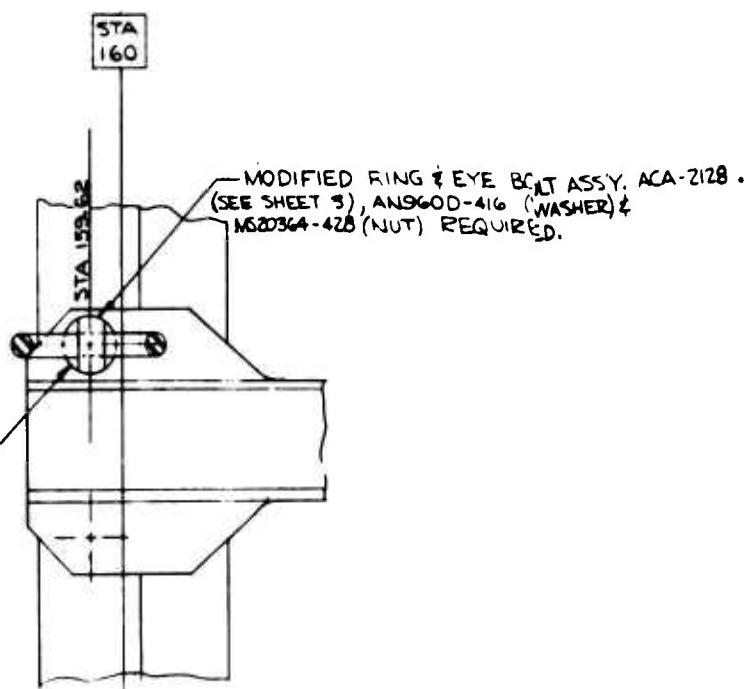
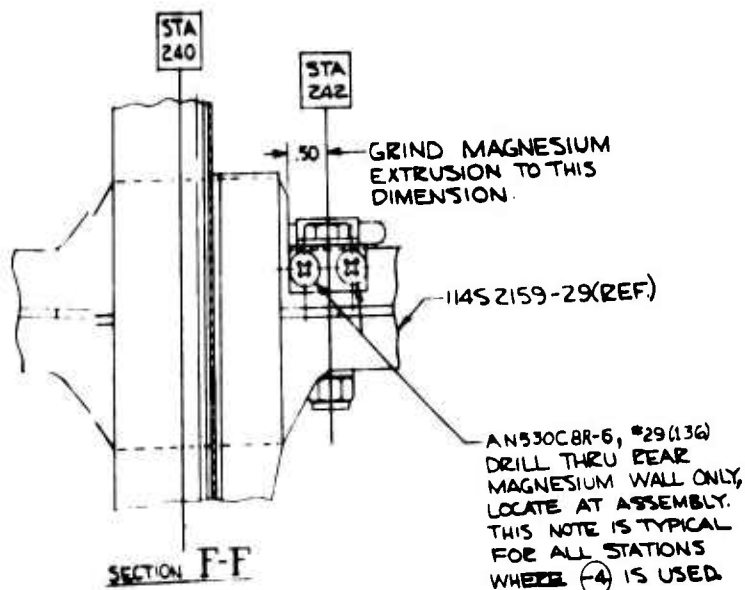
- AN960D-516

AN5C-16A(REF)

BREAK EDGE OF
MAGNESIUM EXTRUSION
.04" 45° CHAMFER.

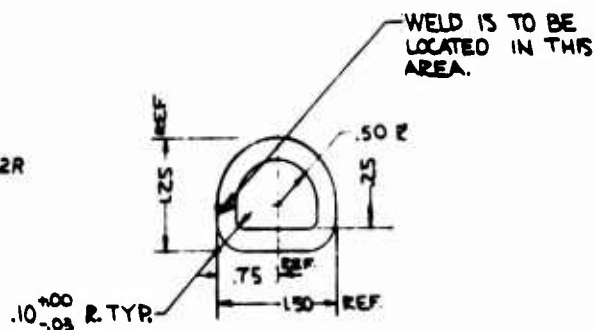
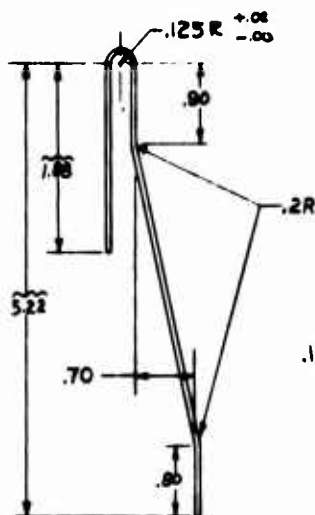
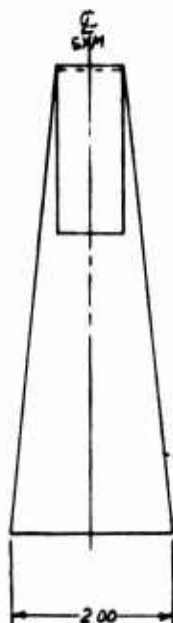
--AN365C-5

SECTION B-B (TYPICAL FOR ALL -4 INSTALL)



SECTION E-E

THIS SECTION APPLIES TO R.H.
SIDE ONLY.

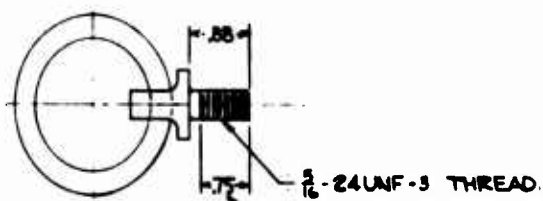


DETAIL (2)

'O' RING
MATL- 4130 ANNEALED .25 DIA. ROD
THIS PART MAY EITHER BE A WELDED ROD
(AS SHOWN) OR A FORGING.

DETAIL (1)

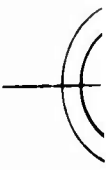
LARGE BELT ATTACHMENT
MATL- 4130 ANNEALED .040 THICK SHEET.



CUT OFF AND THREAD
BOLT TO THIS DIMENSION.
AFTER REWORKING DIP
REWORKED AREA IN ZINC
CHROMATE PRIMER.

DETAIL (3)

THIS RING AND EYE BOLT IS TO BE
MADE FROM THE CAP1289 RING &
EYE BOLT ASSEMBLY USED BY THE
DE HAVILLAND AIRCRAFT OF CANADA LIMITED,
TORONTO ON THE AC-3 CARIBOU.



MODIFIED
THIS RING
MADE FROM
EYE BOLT
HELICOP
WT- .109
USE EXISTING
(NUT) WITH
IS INSTALLED

WELD IS TO BE LOCATED IN THIS AREA.

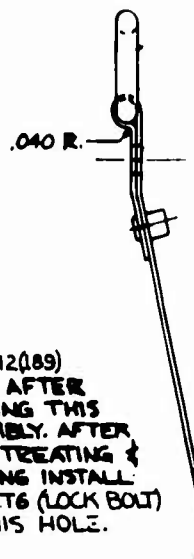
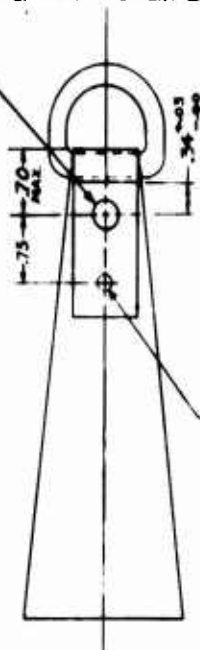
.50 R



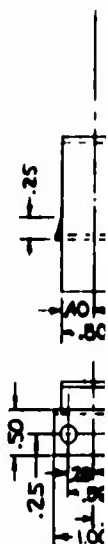
57

D .25 DIA. ROD
OR BE A WELDED ROD
RIGGING.

LETTER "O" DRILL THRU AFTER FORMING THIS ASSEMBLY.

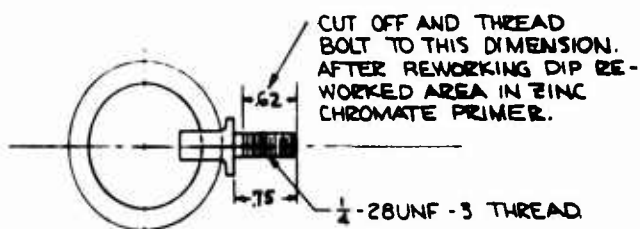


DRILL #12 (189)
THRU. AFTER
FORMING THIS
ASSEMBLY. AFTER
HEAT TREATING &
PLATING INSTALL
ALPP-T6 (LOCK BOLT)
IN THIS HOLE.



SMALL BEL
MATL - 4130

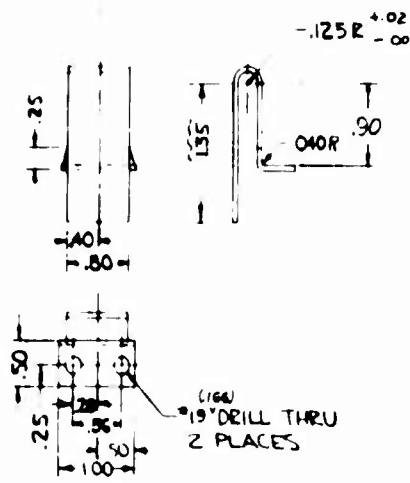
ASSEMBLY OF DETAILS (1) & (2)
BEFORE ALPP-T6 IS INSTALLED HEAT TREAT
THIS ASSEMBLY TO 150,000 PSI TENSILE STRENGTH.
AFTER HEAT TREATING CADMIUM PLATE BOTH PARTS,
THEN INSTALL THE LOCK BOLT.
(3 ASSEM REQ. PER AIRCRAFT)



MODIFIED RING & EYE BOLT ASSEMBLY.

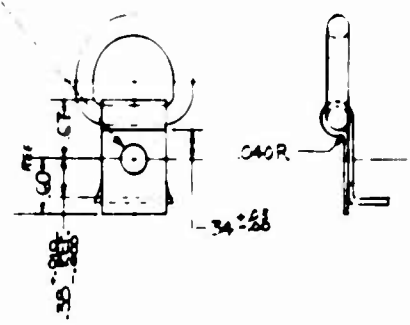
THIS RING & EYE-BOLT IS TO BE
MADE FROM THE EXISTING RING
& EYE BOLT (ACA-2128) ON THE VERTOL HC-1B
HELICOPTER. 4 REQ'D. PER AIRCRAFT
WT. .109 LBS. EACH
USE EXISTING AN960D46 (WASHER) & MS20364-428
(NUT) WHEREVER THIS RING & EYE-BOLT
IS INSTALLED. WT. WASHER = .0009", WT. NUT = .011"

2



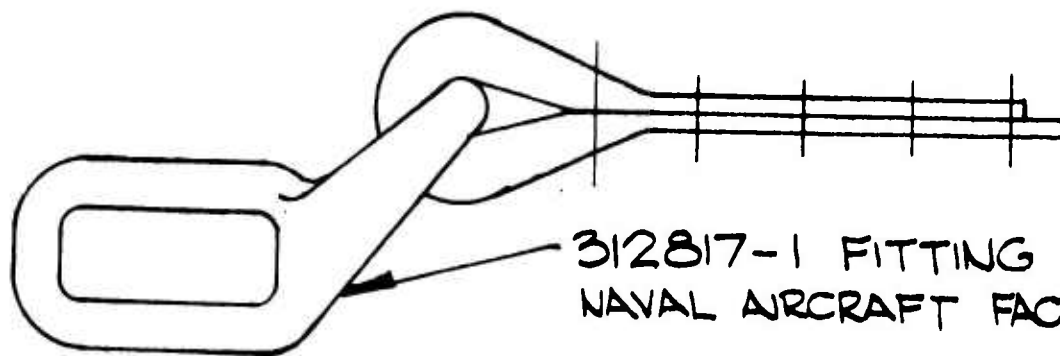
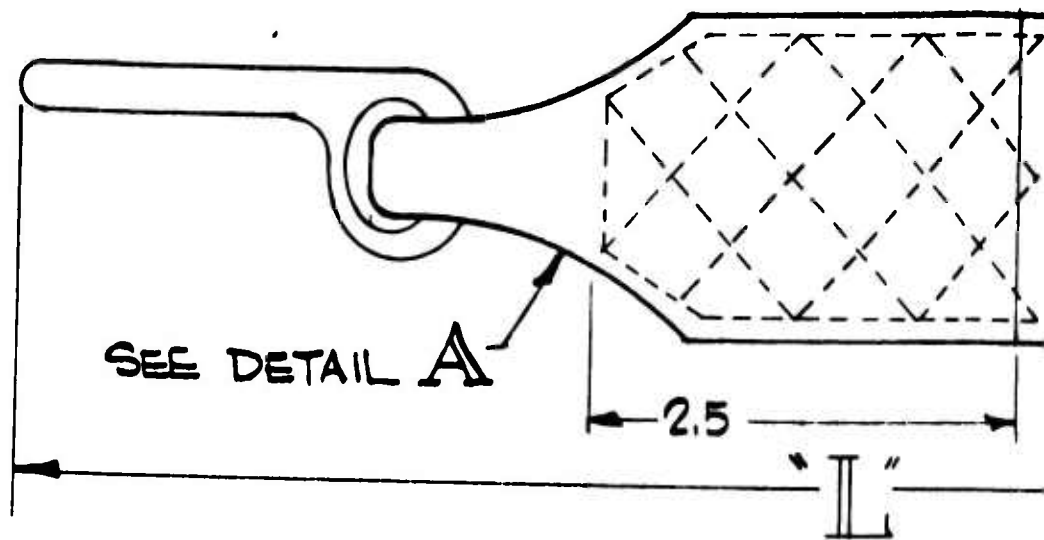
DETAIL - 4
 SMALL BELT ATTACHMENT
 MATL - 4130 ANNEALED .040 THICK SHEET.

(323)
 LETTER "P" DRILL THRU AFTER
 FORMING THIS ASSEMBLY.

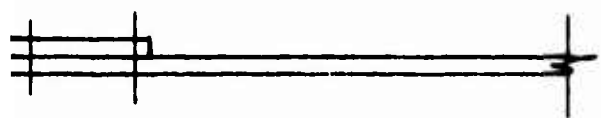
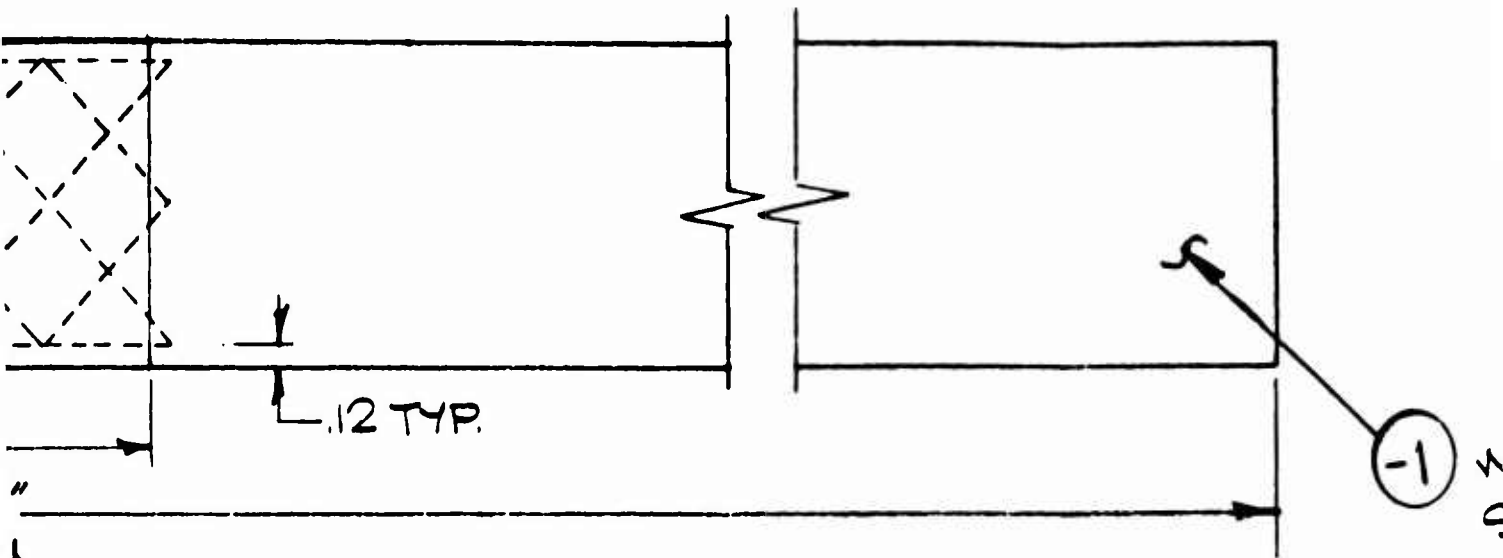


FINAL ASSEMBLY OF DETAILS ② & ③
 HEAT TREAT THIS ASSEMBLY TO
 130,000 PSI TENSILE STRENGTH.
 AFTER HEAT TREATING CADMIUM
 PLATE BOTH PARTS.
 (34 ASSEM REQ PER AIRCRAFT)

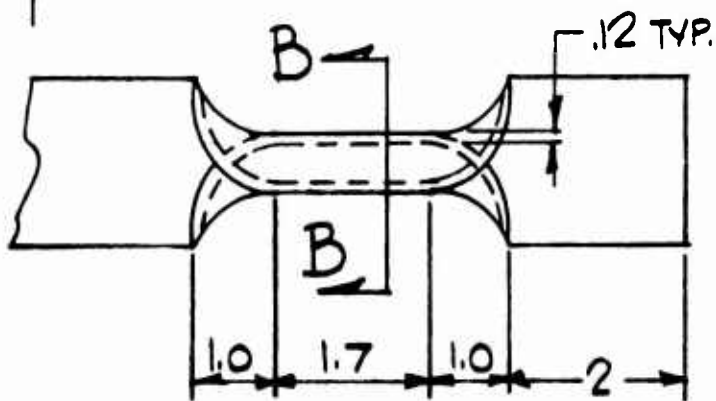
(2)
 HEAT
 STRENGTH
 BOTH PARTS.
 (T)



5. DACRON WEBBING TYPE II PER SPEC. MIL-W-
.065 - .085 THICK X 1.72 WIDE MAX.
WT. 2.10 OZ. / YD. MAX.
 4. STITCHING SHALL BE WITH NYLON CORD, MIL-T-
NO. 3 SIZE TYPE I OR II, CLASS I, AND SHALL
NOT LESS THAN 6 NOR MORE THAN 8 STITCHES
IN ACCORDANCE WITH SPEC. DDD-S-751 TYPE
 3. ENDS OF STITCHING SHALL BE BACK STITCHED ON
 2. SEAR ENDS OF ALL WEBBING TO PREVENT FRAYING
 1. STITCHING INDICATED BY DOTTED LINES ---
- NOTES:



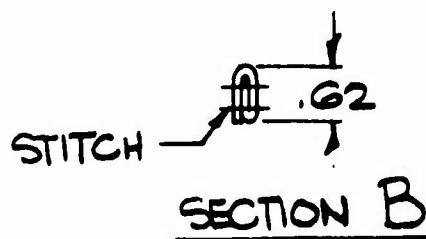
TTING
FT FACTORY



MIL-W-25361

DETAIL A
HALF SIZE

MIL-T-7807B
SHALL CONTAIN
STITCHES PER INCH
51 TYPE 301
CHED 0.5 IN. MIN.
JT FRAYING
S - - - - -

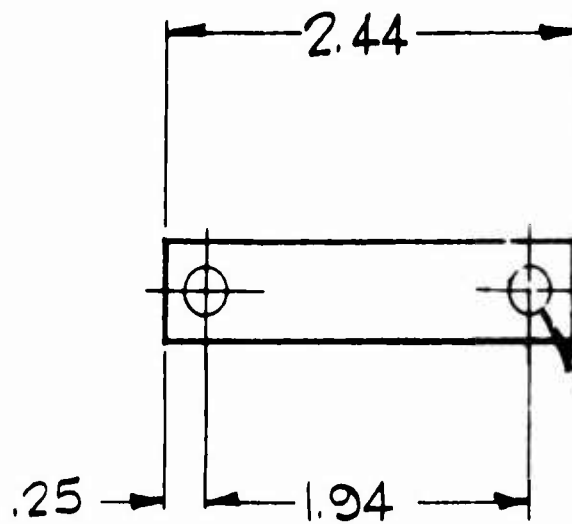


2

1

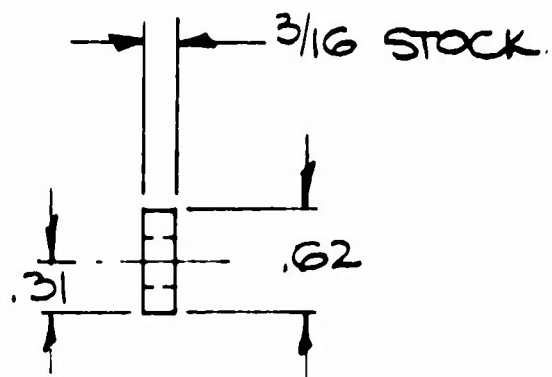
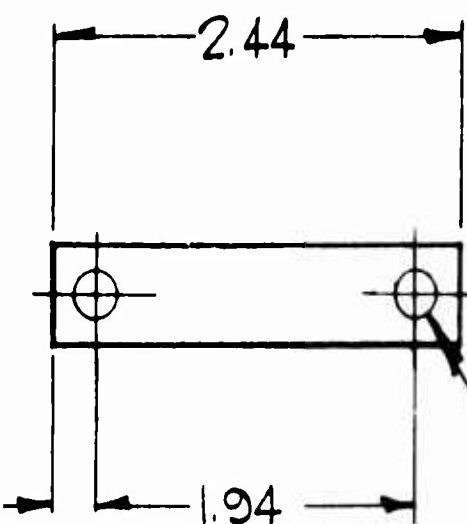
LENGTH OF STRAP		
AIRCRAFT	"L" DIM.	NEXT ASSEMBLY.
HC-1	18.1	HC-1-14
HU-1	16.5	HU-1-11
AC-1	20.8	AC-1-10

-1) WEBBING
SEE NOTE #5



DRILL TH
2 HOLE

1. BREAK SHARP EDGES .02 R.
NOTE:-



DRILL THRU 3/16 DIA.
2 HOLES

SHARP EDGES .02 R.